.S: 948/1

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PATENTS

July 6, 1976

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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July 6, 1976 Volume 948 Number 1

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PATENT NOTICES

Certificates of Correction for the Week of July 6, 1976

D. 239,371	3,914,126	3,935,066	3,944,891
3,181,939	3,914,208	3,935,252	3,944,921
3,380,388	3,914,257	3,935,285	3,945,027
3,510,481	3,918,301	3,935,961	3,945,314
3,623,156	3,919,505	3,936,186	3,945,586
3,666,755	3,921,422	3,936,299	3,945,765
3,697,926	3,922,495	3,936,361	3,845,826
3,735,481	3,923,698	3,936,544	3,946,077
3,775,643	3,924,036	3,936,729	3,946,115
3,780,336	3,924,217	3,936,764	3,946,460
3,816,434	3,924,576	3,936,950	3,946,817
3,843,631	3,924,619	3,937,022	3,946,981
3,844,578	3,924,732	3,937,332	3,947,087
3,845,190	3,925,317	3,937,677	3,947,422
3,848,126	3,925,519	3,937,685	3,948,331
3,852,261	3,925,629	3,937,774	3,948,765
3,856,010	3,925,902	3,937,863	3,948,767
3,857,693	3,926,421	3,938,333	3,948,869
3,858,102	3,926,465	3,939,130	3,949,418
3,868,872	3,926,581	3,939,501	3,949,450
3,869,423	3,926,792	3,939,544	3,949,782
3,870,728	3,926,890	3,939,681	3,949,798
3,874,414	3,927,140	3,939,932	3,950,127
3,876,627	3,928,631	3,940,222	3,950,393
3,876,648	3,928,949	3,940,398	3,950,427
3,877,120	3,929,523	3,940,512	3,951,152
3,880,724	3,929,871	3,940,730	3,951,193
3,883,703	3,929,980	3,940,971	3,951,401
3,885,966	3,930,165	3,941,053	3,951,402
3,889,024	3,930,601	3,941,054	3,951,722
3,891,843	3,930,732	3,941,456	3,951,871
3,892,575	3,930,956	3,941,637	3,951,939
3,894,028	3,931,297	3,942,003	3,951,951
3,897,221	3,932,147	3,942,355	3,952,203
3,900,620	3,932,991	3,942,719	3,952,323
3,903,209	3,933,417	3,942,973	3,952,747
3,904,418	3,933,428	3,942,401	3,952,783
3,904,556	3,933,515	3,943,475	3,953,342
3,904,607	3,933,664	3,943,566	3,955,096
3,905,695	3,933,709	3,943,804	3,955,778
3,905,841	3,933,858	3,943,936	3,958,984
3,905,918	3,934,006	3,944,501	3,959,093
3,906,821	3,934,150	3,944,529	3,959,245
3,907,815	3,934,226	3,944,697	3,960,539
3,909,449	3,934,391	3,944,713	
3,913,666	3,934,616	3,944,798	

Disclaimers

Reissue No. 26,240.—*Carl I. Wasserman*, Queens Village, N.Y. HIGH SPEED PRINTERS WITH COLUMN SPANNING HAMMERS. Patent dated July 18, 1967. Disclaimer filed Apr. 21, 1976, by the assignee, *Potter Instrument Co., Inc.*

Hereby enters this disclaimer to claims 7, 12 and 13 of said patent.

Design No. 197,458.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. FOUNTAIN BRUSH. Patent dated Feb. 11, 1964. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby disclaims her entire interest in all claims of said patent.

Design No. 207,440.—*Ernest H. Bucknell*, Los Angeles, and *Jack K. Rauh* and *Irving A. Ward*, Hacienda Heights, Calif. SPRAY VALVE. Patent dated Apr. 11, 1967. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,390,981.—*Lewis C. Hoffman*, Wilmington, Del. METHOD FOR THE PRODUCTION OF FINELY DIVIDED METALS. Patent dated July 2, 1968. Disclaimer filed Apr. 30, 1976, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claims 1–7, 9–11, and 17 of said patent.

3,699,089.—*Otto Wichterle*, Prague, Czechoslovakia. ANHYDROUS SPARINGLY CROSS-LINKED HYDROPHILIC COPOLYMERS. Patent dated Oct. 17, 1972. Disclaimer filed Feb. 3, 1976 and Mar. 12, 1976, by the assignee, *Ceskoslovenska Akademie Ved.*

Hereby enters this disclaimer to claims 1 through 13 of said patent.

3,770,242.—*Joseph O'Connor, Jr.*, Goshen, N.Y. AERODYNAMICALLY AND HYDRODYNAMICALLY STABLE TORQUED BUTTERFLY VALVE AND VANE. Patent dated Nov. 6, 1973. Disclaimer filed Jan. 23, 1975, by the assignee, *Kicley & Mueller, Inc.*

Hereby enters this disclaimer to claims 3 and 10 of said patent.

3,825,018.—*Dominic Ferraro*, Walla Walla, Wash. VINER. Patent dated July 23, 1974. Disclaimer filed May 13, 1976, by the assignee, *Chisholm-Ryder Company, Inc.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,851,393.—*Charles M. Weiss* and *Isiah Lew*, New York, N.Y. ORAL IMPLANT. Patent dated Dec. 3, 1974. Disclaimer filed May 11, 1976, by the assignee, *Oratonics, Inc.*

Hereby enters this disclaimer to claims 1–20 of said patent.

3,868,324.—*Robert F. Taylor*, Milwaukee, *Donald A. Strow*, Hales Corners, and *Hosein Mansouri*, New Berlin, Wis. WATER INTAKE AND FISH RETURN SYSTEM. Patent dated Feb. 25, 1975. Disclaimer filed May 17, 1976, by the assignee, *Envirex Inc.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,919,181.—*Kenneth C. Petersen*, Scotia, and *Royal A. Meader, Jr.*, Amsterdam, N.Y. PREPARATION OF HYDROCARBON RESINS USING ZIRCONIUM TETRACHLORIDE. Patent dated Nov. 11, 1975. Disclaimer filed May 7, 1976, by the assignee, *Schenectady Chemicals, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 28–32 of said patent.

3,928,480.—*Iwao Tabushi*, Fukuoka, and *Koji Fukunishi*, Kyoto, Japan. PROCESS OF PRODUCING ALKYL ADAMANTANES. Patent dated Dec. 23, 1975. Disclaimer filed May 4, 1976, by the assignee, *Idemitsu Kosan Co., Ltd.*

Hereby enters this disclaimer to claims 1 through 16 of said patent.

3,936,956.—*Joseph P. Famolare, Jr.*, Florence, Italy. REFLEX ACTION SOLE FOR SHOES HAVING SINUOUS CONTOURED BOTTOM SURFACE. Patent dated Feb. 10, 1976. Disclaimer filed May 14, 1976, by the assignee, *Famolare, Inc.*

The term of this patent subsequent to July 8, 1989, has been disclaimed.

Dedications

2,882,632.—*Donald M. Rockwell*, and *Armand E. Keeley*, and *William D. Joseph*, Huntingdon, Pa. MARKER MATERIAL AND METHOD. Patent dated Apr. 21, 1959. Dedication filed Apr. 13, 1976, by the assignee, *Prismo Universal Corporation.*

Hereby dedicates to the Public the entire term of said patent.

3,168,412.—*John R. Wald, Jr., Rufus W. Wilson,* and *Robert B. Bagshaw,* Huntingdon, Pa. REFLECTORIZING APPARATUS AND METHOD. Patent dated Feb. 2, 1965. Dedication filed Apr. 13, 1976, by the assignee, *Prismo Universal Corporation.*

Hereby dedicates to the Public the entire term of said patent.

3,218,186.—*Eduard R. De Vries,* Huntingdon, Pa. MOISTUREPROOFING REFLECTIVE MARKERS. Patent dated Nov. 16, 1965. Dedication filed Apr. 13, 1976, by the assignee, *Prismo Universal Corporation.*

Hereby dedicates to the Public the entire term of said patent.

3,223,005.—*Harold V. Carlson,* Hudson, Ohio. SEALING MEANS FOR CRACKED SURFACES. Patent dated Dec. 14, 1965. Dedication filed May 18, 1976, by the assignee, *Firestone Tire & Rubber Company.*

Hereby dedicates to the People of the United States the remaining term of said patent.

3,247,005.—*Allan D. Parry,* East Freedom, and *William H. Riley, Jr.,* Altoona, Pa. METHOD OF PRODUCING DUAL MESSAGE SIGNS. Patent dated Apr. 19, 1966. Dedication filed Apr. 13, 1976, by the assignee, *Prismo Universal Corporation.*

Hereby dedicates to the Public the entire term of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 19, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-8-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-22-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-16-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-4-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-19-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-22-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-16-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-19-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-31-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	11-3-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-9-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	6-25-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-8-75

Expiration of patents: The patents within the range of numbers indicated below expire during July 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,893,005 to 2,597,499 inclusive
Plant Patents	Numbers 1,850 to 1,855 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 6, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

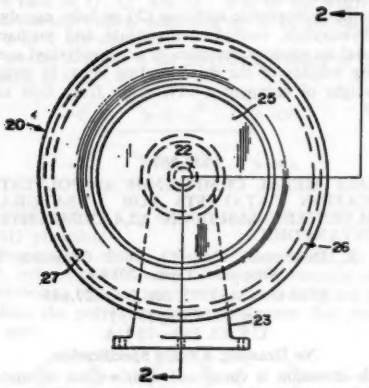
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T948,001
METHOD OF CENTRIFUGALLY CASTING A COMPOSITE TIRE OR SIMILAR ARTICLE

Floyd Mount Smith, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of abandoned application Ser. No. 855,706, Sept. 5, 1969. This application Oct. 26, 1973, Ser. No. 409,840

Int. Cl. B29c *5/04*
U.S. Cl. 264—311
2 Sheets Drawings. 8 Pages Specification



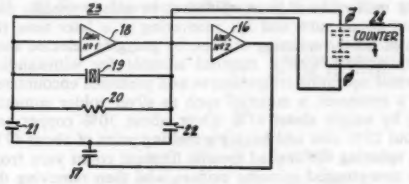
A method of centrifugally casting a composite tire structure by introducing into a rotating mold a curable liquid resin and particles having a greater specific gravity than the resin and the desired physical characteristics for use in a tire tread area. The particles, because of centrifugal force, move outwardly through the resin and position themselves in the tread stock area and the remainder of the tire is formed of the curable liquid resin. The particles are preferably added after the resin however, they may be added before or at the same time as the resin.

T948,002
QUARTZ CRYSTAL OSCILLATOR

Eugene R. Keeler, Camp Hill, Pa., assignor to Timex Corporation, Waterbury, Conn.

Filed Apr. 28, 1975, Ser. No. 572,362
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R
1 Sheet Drawing. 9 Pages of Specification

A Pierce type oscillator comprises a parallel resonant crystal and an inverting amplifier which provides the required signal inversion and voltage gain. The subject oscillator is essentially a modified Pierce circuit including first and second amplifiers wherein the second amplifier is used to provide a signal in phase with the signal at the input of the first amplifier, said first amplifier acting basically as a Pierce circuit. The second amplifier reinforces the tendency of the first amplifier to oscillate.



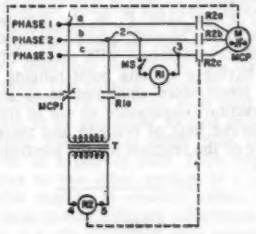
The crystal oscillator comprising the present invention can be configured to use less power than an equivalent Pierce oscillator and may be used advantageously in electronic watch circuits.

T948,003
PHASE FAILURE PROTECTION CIRCUIT FOR A REGENERATIVE LOAD

Dannis R. Johnson, Prior Lake, and John E. Waldschmidt, Burnsville, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Continuation of abandoned application Ser. No. 497,343, Aug. 14, 1974. This application May 7, 1975, Ser. No. 575,290

Int. Cl. H02h *3/32*
U.S. Cl. 317—46
1 Sheet Drawing. 10 Pages of Specification



A phase failure protection circuit for a three phase regenerative load comprising a circuit breaker for controlling power to the load and being energized by current from a first phase of the source, a relay having normally open contacts which is energized by a second phase of the source for controlling the circuit breaker energization current, and a thermal switch having normally closed contacts which responds to the temperature of the load for controlling the energization current to either the relay or circuit breaker, wherein the circuit breaker contacts will not initially close if any phase of the source is absent and the circuit breaker will be cer-

tain to open if one phase of the source should fail during excitation of the load due to overheating of the load even in the presence of regeneration from the load.

T948,004

PROCESS FOR TEMPORARILY REDUCING NUMBER OF SPINNING ORIFICES IN SPINNERET

James O. Casey, 2476 Wildwood Drive 37660, and Bobby M. Phillips, Rte. 8, 5741 Chestnut Hills Drive 37664, both of Kingsport, Tenn.

Filed June 9, 1975, Ser. No. 585,152

Int. Cl. B28b *7/04;* D01d *1/10*

U.S. Cl. 264—40

No Drawing. 5 Pages of Specification

Process for temporarily reducing the number of spinning orifices in a given spinneret to spin a specific filament count yarn and for recovering at a later time the use of all the spinning orifices, by plugging selected spinning orifices with a material suitable for withstanding normal operating temperatures and pressures encountered by a spinneret, a material such as silver solder comprising by weight about 45% silver, about 30% copper and about 25% zinc and having a melting point of about 677° C., spinning the desired specific filament count yarn from the non-plugged spinning orifices, and then removing the material used for plugging by cleaning the spinneret in a suitable molten salt bath followed with caustic and acid washes, and water rinses.

T948,005

CATALYTIC VAPOR PHASE OXIDATION OF ISOBUTYLENE

David C. Lini, 705 Pine Ridge Road, Springfield, Pa. 19063, and John J. McCoy, 825 Rhoads Drive, Media, Pa. 19064

Continuation of abandoned application Ser. No. 370,095, June 11, 1973. This aplication June 30, 1975, Ser. No. 591,543

Int. Cl. C07c *45/04*

U.S. Cl. 260—604 R

No Drawing. 11 Pages of Specification

Isobutylene is oxidized to methacrolein in the vapor phase with molecular oxygen at temperatures in the range of from 970° F. to 1150° F. in the presence of a bismuth molybdate or bismuth phosphomolybdate catalyst in particulate form admixed with masses of a metal or metal alloy having a melting point ranging from above the reaction temperature employed up to about 250° F. above the reaction temperature to aid in the dissipation of the exothermic heat of reaction and thereby improve the selectivity of the reaction for the production of methacrolein.

T948,006

COATED FILMS

Cyril John Ealding, Puckeridge, near Ware, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 24, 1975, Ser. No. 616,302

Claims priority, application Great Britain, Oct. 18, 1974, 45,205/74

Int. Cl. B32b *27/08*

U.S. Cl. 428—515

No Drawing. 15 Pages of Specification

Films of polyethylene terephthalate having an ink coating thereon and suitable for use as drafting papers are disclosed. With such films the ink is adhered to the underlying sheet using a new polyvinyl alcohol admixture with other coating materials and the resulting product is substantially or completely devoid of broadening or spreading beyond the intended confines of the lines while maintaining good ink adhesion to the underlying sheet.

The synthetic plastics film is coated on one or both sides of its surfaces with a layer susceptible to marking by hydrophilic inks with a coating of (1) polyvinyl alcohol, or partially hydrolyzed polyvinyl acetate which has been hydrolyzed to a degree of at least 72 mole percent, and preferably 72–88, to provide adhesion of the ink to the film, and (2) from weight percent calculated on the total weights of (1) plus (2), of 10–70 a hydrophobic additive. Component (2) is selected from suitable waxes and polymeric materials including a film-forming or non-film-forming polymer or copolymer of acrylic or methacrylic acid, or an ester of either acid, or a polymer or copolymer of vinyl acetate, copolymerizable monomers for the acrylates include styrene, alkyl substituted styrene, acrylonitrile, methacrylonitrile, vinyl acetate, methacrylic acid, acrylic acid, maleic acid, fumaric acid, itaconic acid, crotonic acid, acrylamide and methacrylamide. Conventional coating additives may be included in the coating layer. Various plastics film bases may be used; biaxially oriented polyethylene terephthalate films are preferred.

Specific hydrophobic additives (2) include: copolymers of ethylacrylate, methyl methacrylate and methacrylic acid, and an aqueous emulsion of homopolyvinyl acetate. Coating weights of the dried coating layer, in terms of the weight of component (1), range from 0.04 to 0.3 g./m.^{2}

T948,007

ALKALI METAL COMPOUNDS AS POLYESTERIFICATION CATALYSTS FOR UNSATURATED POLYESTERS BASED ON 2,2,4-TRIMETHYL-1,3-PENTANEDIOL

John R. Dombroski, Rte. 13, 5608 Cheyenne Trail, Kingsport, Tenn. 37664

Filed Oct. 31, 1975, Ser. No. 627,646

Int. Cl. C08g *63/52*

U.S. Cl. 260—75 UA

No Drawing. 8 Pages Specification

This invention is concerned with a class of materials which is useful for improving the polyesterification process of 2,2,4-trimethyl-1,3-pentanediol. In particular, this invention relates to the use of Group IA alkali metal acetates, carbonates, hydroxides, oxalates, alkoxides and soluble oxides as polyesterification catalysts and co-catalysts for the preparation of unsaturated polyester based on 2,2,4-trimethyl-1,3-pentanediol and blends of 2,2,4-trimethyl-1,3-pentanediol and other glycols. It is shown in this invention that the alkali metal compounds enable the preparation of unsaturated polyesters based on 2,2,4-trimethyl-1,3-pentanediol with (1) a shorter polyesterification time and (2) reduces the loss of 2,2,4-trimethyl-1,3-pentanediol due to undesirable side reactions.

T948,008

POLYMER COMPOSITIONS

Terence Edwin Attwood, Kimpton, and John Leslie Freeman and Leslie Richard John Hoy, St. Neots, England, assignors to Imperial Chemical Industries Limited, London, England

Claims priority, application Great Britain, Mar. 14, 1974, 11,439/74, 11,440/74

Filed Feb. 25, 1975, Ser. No. 553,069

Int. Cl. I08k *1/01*

U.S. Cl. 260—45.7 P

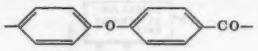
No Drawing. 17 Pages of Specification

Aromatic polyetherketones are characterized by their high softening point and high melt viscosities, thus mak-

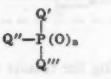
ing them useful where the resulting article must withstand high service temperatures.

Novel thermoplastic compositions comprising an aromatic polyetherketone are modified with organic phosphorous compounds to at least stabilize, and in some instances reduce, the melt viscosity of the composition thereby rendering the polyetherketone compositions easier to melt-fabricate.

For example, compositions comprising an aromatic polyetherketone, such as containing the repeating units:

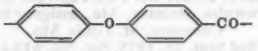


in which some (i.e. up to 25%) of the —CO— groups may be replaced by —SO_2— groups, and 0.01 to 4% (preferably from 0.01% to 2%) of at least one phosphorus additive compound of formula:

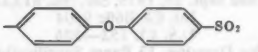


where each of Q', Q'' and Q''' if R or OR where R is a hydrocarbon radical consisting up to 20 carbon atoms n is 0 or 1 are disclosed.

A specific example is the polymer consisting of repeating units of:



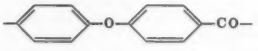
and



in the ratio of 95:5 to which is added 0.2% tri (nonyl phenyl) phosphite.

Incorporation of the phosphorus compound, as indicated, reduces the tendency of the melt viscosity of the polyketone to increase upon prolonged heating and hence stabilizes the polyketone. Other polymers that may be used are:

alone or copolymerized with:



Triphenyl phosphate is a preferred phosphorous compound.

T948,009

HYDRAULIC CEMENT-HYDROXYPROPYL METHYLCELLULOSE COMPOSITIONS

George K. Greminger, Jr., and Geoffrey S. Newhouse, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 366,899, June 4, 1973. This application Mar. 26, 1975, Ser. No. 562,312

Int. Cl. C04b *7/353*
U.S. Cl. 106—93
No Drawing. 20 Pages of Specification

An intimate mixture of (a) a hydraulic cement; (b) about 0.01% to about 5.0%, based on the dry weight of the cement, of a hydroxypropyl methylcellulose having about 0.4 to about 1.3 methoxyl degree of substitution and about 0.4 to about 1.8 hydroxypropyl degree of molar substitution; and optionally (c) a filler material such as sand, limestone, asbestos fibers, concrete aggregate and the like provides an improved cementitious material for preparation of masonry and tile mortars, stucco, concrete, etc. Cement products prepared from this material have improved water-retention properties especially at elevated temperatures without unduly extended set times.

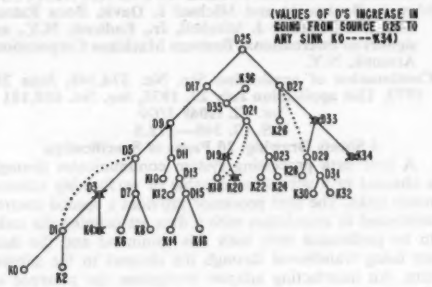
T948,010

DIRECTORY INSERTION AND DELETION METHOD AND MEANS

Luther J. Woodrum, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 411,545, Oct. 31, 1973, which is a continuation of application Ser. No. 136,951, Apr. 23, 1971. This application Apr. 10, 1975, Ser. No. 566,892

Int. Cl. G06f *7/00*
U.S. Cl. 444—1
27 Sheets Drawing. 187 Pages of Specification



An electrical method for generating and maintaining an electrical directory entity in a data processing machine. The directory may be used to automatically locate objects in the computer system, e.g. in main store or on I/O devices. The objects are represented by electrical identifier signals received as input to the method. Electrical signals are generated comprising connected inner vertices and sinks. The signals comprising each inner vertex from a bit-index field, a flag field, and a connecting edge field. The inner vertices are connected in ascending order along a path in the tree structure by the electrical signals forming the edge fields of the inner vertices in the connected paths. The physical configurations of the electrical identifier signals are used as search arguments for insertions or deletion in a connected path when it is traced. The physical layout of the vertices permits total flexibility by allowing each next vertex in a connected path to be physically located anywhere in the directory entity. Each vertex other than the source is located in one of a pair of cells. Each edge field connects its vertex to two other vertices in a pair of cells. The edge fields may be in absolute, offset, or invertible form, each form having different advantages when using the invention, e.g. the invertible edge permits backward tracing along a connected path.

T948,011

DETERMINATION OF AMINE OR AMIDE NITROGEN CONTENT IN VEGETABLE OIL

James C. Kuck, New Orleans, La., assignor to the United States of America as represented by the Secretary of Agriculture

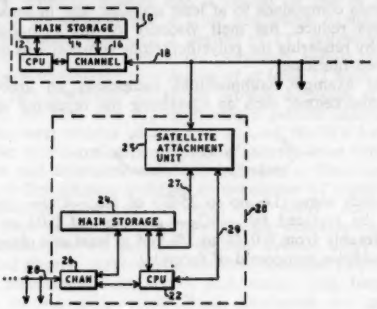
Filed Jun. 9, 1975, Ser. No. 585,214
Int. Cl. C11b *3/04;* **G01n** *33/26*
U.S. Cl. 23—230 R
No Drawings. 7 Pages of Specification

Minute amounts of nitrogen in amines or amides in vegetable oils are determined. A sample of vegetable oil

is weighed into an extraction flask and hydrochloric acid and ethanol are added. After refluxing for about 12 hours, aqueous hydrochloric acid is added and the mixture is refluxed for about 6 more hours. The contents of the flask are then transferred to a separatory funnel and allowed to stand until separation is attained. The bottom layer containing the ethanol and aqueous hydrochloric acid is then collected and the oil layer returned for further extraction and refluxing by the same method. This procedure is repeated twice and each time the bottom layer is collected. The collected bottom layer material is then digested by the Kjeldahl method, titrated with .1N sodium hydroxide, and the percent nitrogen extracted is calculated. The method is useful in detecting and measuring traces of toxic substance is vegetable oils.

T948,012
MULTIPROCESSOR INTERFACING APPARATUS
Max A. Bouknecht and Michael I. Davis, Boca Raton, Fla., and Matthew J. Mitchell, Jr., Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 374,448, June 28, 1973, This application July 29, 1975, Ser. No. 600,181
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5
4 Sheets Drawing. 20 Pages of Specification

A host data processing system communicates through a channel to a subsystem capable of performing autonomous tasks. The host processor provides a special control command in association with a data set defining the tasks to be performed with both this command and the data set being transferred through the channel to the subsystem. An interfacting adapter recognizes the presence of the special command to provide a response to the channel relieving it of further connection to the subsystem after the task defining data set transfer is completed. Execution of the task defined by the data set in the subsystem causes he adapter to return a signal to the channel indicative that the task has been performed. The channel can then notify the host processing system or, if command chaining is indicated, can immediately proceed to



transfer data reflecting the results of the task performance to the host processing system.

T948,013
RADIAL CARCASS PLIES CONTAINING LOOSELY TWISTED NYLON OR POLYESTER STRANDS
John L. Brownlee, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 15, 1975, Ser. No. 613,684
Int. Cl. B60c *9/04*
U.S. Cl. 152—356
No Drawing. 13 Pages Specification

Carcass plies composed of loosely twisted nylon 66 or polyester strands embedded in rubber are used instead of conventional plies in radial tires. Use of the plies of the invention provides radial tires at reduced manufacturing costs without sacrificing durability, performance or riding comfort.

REISSUE PATENTS

GRANTED JULY 6, 1976

ERRATA

For CLASS	See PATENT NO.
229–014 B	28,892
292–292	28,893

REISSUES

JULY 6, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,889

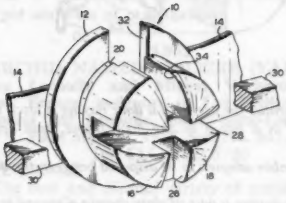
METHOD AND APPARATUS FOR ORTHODONTIC TREATMENT

Alexander J. Wildman, Eugene, Oreg., assignor to Consyne Corporation, San Marcos, Calif.

Original No. 3,578,744, dated May 18, 1971, Ser. No. 857,351, Sept. 12, 1969. Application for reissue Feb. 24, 1972, Ser. No. 229,217

Int. Cl.[2] A61C 7/00

U.S. Cl. 32—14 A 17 Claims



1. An orthodontic arch wire bracket for attachment to a tooth band and for connection to an arch wire means of predetermined thickness comprising:

a body member including a base portion having a base surface for attachment to a tooth band, a head portion having a labial surface,

said head portion having a horizontal groove therein opening to said labial surface for receiving an arch wire, said groove having a depth greater than the said arch wire thickness,

said head portion having a first vertical groove therein opening to said labial surface and having a depth relative to the depth of said horizontal groove by an amount substantially no less than said arch wire thickness,

said base portion having a second vertical groove therein,

said head portion having a notch therein extending between said first and second vertical grooves and opening to said labial surface of said head portion,

a follower member comprising a base portion adapted slidably to engage within said second vertical groove, an arm portion adapted to be received within said notch, and a finger portion adapted to be received in said first vertical groove and to extend over an arch wire engaged within said horizontal groove,

and lock means for releasably engaging said follower to prevent accidental removal of the same form from said body member.

Re. 28,890

ACTUATOR ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

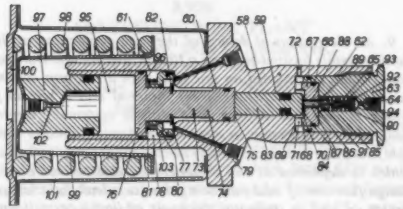
Brian Ingram, Lugamo, Australia; David Anthony Harries, Solihull, and Lancelot Phoenix, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

Original No. 3,694,038, dated Sept. 26, 1972, Ser. No. 73,202, Sept. 17, 1970. Application for reissue Jan. 15, 1974, Ser. No. 433,510

Claims priority, application United Kingdom, Sept. 17, 1969, 45705/69; Jan. 6, 1970, 531/70; Mar. 8, 1970, 13117/70

Int. Cl.[2] B60T 8/06

U.S. Cl. 303—21 F 25 Claims



17. An actuator assembly for a vehicle hydraulic braking system comprising a housing having first and second opposite ends, means in said housing adjacent to said first end defining at least one chamber having a first inlet for connection to hydraulic fluid under pressure and an outlet for connection to a slave cylinder of a wheel brake, a valve controlling communication between said inlet and outlet, a piston assembly working in a cylinder bore in said housing in communication with said chamber and movable between an advanced position in which said valve is held open and the effective volume of said chamber is at a minimum value and a retracted position in which said valve is shut and the effective volume of said chamber is greater than the minimum, means in said housing for enabling fluid from a high pressure source to urge said piston assembly to said advanced position, means in said housing for enabling fluid to move said piston assembly to said retracted position when the deceleration of a braked wheel controlled by a supply of hydraulic fluid from said outlet exceeds a predetermined value, a movable member in said housing disposed between said piston assembly and said second end of said housing and movable between a first position in which said member permits said piston assembly to assume said retracted position and a second position in which said member maintains said piston assembly in said advanced position, resilient means for constantly biassing said movable member to said second position, and means in said housing for enabling the fluid from said high pressure source to hold said movable member in said first position in opposition to said resilient means, whereby, in the event of the pressure of said high pressure source falling, said resilient means can move said movable member to said second position to maintain said piston assembly in said advanced position.

Re. 28,891

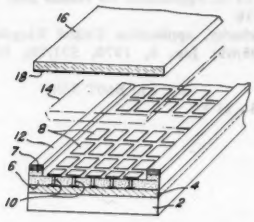
LIQUID CRYSTAL DISPLAY DEVICE

Joseph Borel, Echirolles, and Jacques Robert, St. Egreve, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Original No. 3,716,290, dated Feb. 13, 1973, Ser. No. 190,178, Oct. 18, 1971. Application for reissue June 25, 1974, Ser. No. 483,028

Int. Cl.[2] G02F 1/16

U.S. Cl. 350—160 LC **2 Claims**



9. An electrooptical device of the type comprising a film of liquid crystals located between a first insulating and transparent plate which is provided on one face with a uniform coating of conductive and semi-transparent material and a second plate which is provided on one face with a system of electrodes adapted for connection to electrode excitation circuits wherein said first plate rests by means of its coated face on a metallic wall which is deposited at the periphery of said second plate, the design function of said wall being to ensure leak-tightness of the device as well as optimum thickness of liquid crystals and an electrical connection to said first plate coated face.

Re. 28,892

CARTON

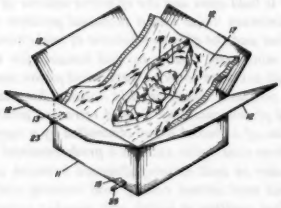
Joseph J. Esty, San Diego, Calif., assignor to The U.C. San Diego Foundation, La Jolla, Calif.

Reissued No. Re. 27,872, dated Jan. 8, 1974, Ser. No. 126,652, Mar. 22, 1971.

Original No. 3,521,806, dated July 28, 1970, Ser. No. 645,968, June 14, 1967. Application for reissue Feb. 7, 1975, Ser. No. 547,966

Int. Cl.[2] B65D 5/60, 81/20

U.S. Cl. 229—14 B **5 Claims**



1. An inherently stable package for shipping and preserving perishable products such as food and flowers, said package comprising:

(A) an inherently stable carton having:

(1) two openings for tubes;

(B) a flexible and sealable container having:

(1) a sealable product opening,

(2) a permanently sealable inlet tube, for purging gas, hermetically connected with the container, said tube being aligned with and extendable through one of the said openings in the carton for connecting the same with a source of purging gas,

(3) a permanently sealable outlet tube hermetically connected with the container, said latter tube being aligned with and extendable through the other of said openings in the carton.

Re. 28,893

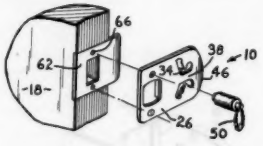
DOOR LOCK

Archie D. Adkison, Jr., 7007 Chapel Woods Lane, Kansas City, Mo. 64152

Original No. 3,731,965, dated May 8, 1973, Ser. No. 207,478, Dec. 13, 1971. Application for reissue Apr. 17, 1975, Ser. No. 568,916

Int. Cl.[2] E05C 1/18

U.S. Cl. 292—292 **8 Claims**



6. Lock apparatus for use with a door having a latch adapted to be received in a notch in the door frame, said apparatus comprising:

a planar member adapted to be disposed between the door and the frame;

said member having a pair of slots therein disposed in diverging relationship to a horizontal plane passing through said structure when the latter is disposed between the door and the frame;

said member including a divider element lying in said horizontal plane for separating said slots one from the other;

each of said slots having at least one edge thereof configured to present a plurality of seats along the edge of the slot;

means for mounting said member on said frame; and

keeper means adapted to be received in one of said slots when said member is disposed between the door and the frame with the keeper means received in the seat adjacent the door whereby said keeper means presents a dead bolt lock to preclude opening of the door.

Re. 28,894

METHOD FOR THE PREPARATION OF CONCENTRATED ANION-DEFICIENT SALT SOLUTIONS

Johannes B. W. Kanij, Zevenaar; Arend J. Noothout, Oosterbeek, and Marie E. A. Hermans, Arnhem, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Original No. 3,838,062, dated Sept. 24, 1974, Ser. No. 283,291, Aug. 24, 1972. Division of Ser. No. 106,922, Jan. 15, 1971, abandoned. Application for reissue June 16, 1975, Ser. No. 587,209

Claims priority, application Netherlands, Jan. 16, 1970, 7000674; Australia, Jan. 8, 1971, 24159/71

Int. Cl.[2] C01G 43/00

U.S. Cl. 252—301.1 **2 Claims**

1. A method for preparing a concentrated anion-deficient actinide salt solution containing at least one actinide oxide selected from the group consisting of PuO_2, UO_2, UO_3 and U_3O_8, said method including dissolving at a temperature of at least 60° C., said [salt] *oxide* in an aqueous solution of thorium nitrate having a concentration of at least 4 molar.

PLANT PATENTS

GRANTED JULY 6, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,931
WILT RESISTANT OLIVE TREE

Stephen Wilhelm and James E. Sagen, Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 29, 1974, Ser. No. 518,307
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—33 **1 Claim**

1. The new and distinct variety of olive tree (*Olea europaea* L.) useful as a rootstock to which may be grafted high yield commercial varieties, as herein described and illustrated, characterized particularly as to novelty by the small size and volume of its fruit, its high tolerance to the disease know as Verticillium wilt, its high vigor and ease of propagation.

3,932
ORCHID NAMED MOLIERE (VALECOR)

Maurice Lecoufle and Michel Vacherot, Boissy-St.-Leger, France, assignors to Les Petits-fils et fils de Vacherot and Lecoufle, Boissy-Saint-Leger, France

Filed Mar. 24, 1975, Ser. No. 561,324
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinct variety of orchid plant of the Odontonia species substantially as herein shown and described, characterized by its vigorous growth habit and rapid production of new bulbs, its abundant production of large, well-formed flowers, the attractive coloring of the flowers, and its relatively long blooming period.

3,933
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 11, 1975, Ser. No. 585,861
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly by the combined characteristics of lavender-pink inflorescence color, flat inflorescence form which is not known to reflect at maturity, spoon-anemone inflorescence type, tall plant height, spreading branching pattern, six week flowering response in controlled programs, average natural season flower date of Sept. 20, and 2.25 to 3.0 inches diameter across face of inflorescence at maturity.

3,934
PEACH TREE

Charles Preuss, 8690 N. Minnewawa Ave., Clovis, Calif. 93612

Filed June 27, 1975, Ser. No. 590,825
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described which is generally similar to the Preuss Suncrest (U.S. Plant Pat. No. 2,797) in vigorous growth, and in regular heavy bearing of yellow-fleshed freestone fruit which are somewhat more spherical, have skin which has more yellow and somewhat less red, but of a brighter and lighter shade, than the Preuss Suncrest and which ripens approximately six days earlier than the Preuss Suncrest and the Merrill 49er (unpatented) and about sixteen days earlier than the Fay Elberta (unpatented).

3,935
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed July 24, 1975, Ser. No. 598,671
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type as illustrated and described, characterized by buds and flowers resembling the Scarlet Gem (Plant Pat. #2,155) miniature rose in general form and size but color is a rich deep red and flowers tending to be more rounded (ball shaped), the general color effect, both outdoors and in greenhouse; being deep red; and further characterized by a plant which is of vigorous and compact growth, easy to propagate from cuttings, with small semi-glossy foliage and an abundance of bloom, with flowers usually borne several to the stem in moderately tight clusters.

3,936
PLANT OF THE FERN FAMILY

Howard G. McAllister, 1100 NW. 75th Ave., Plantation, Fla. 33313

Filed Aug. 14, 1975, Ser. No. 604,637
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct plant variety of the fern family substantially as herein described and characterized by a growth habit which provides specimens that have robust appearing, compound, bipinnate fronds that grow in a compact rosette arrangement with a notable absence of sori, and that in comparison to the fronds of the *Nephrolepis exaltata* "Curly Boston" variety are faster maturing, generally longer and wider appearing at maturity, and provided with a rachis having an abaxial surface color at its proximal end that extends further distally on the rachis than that of the "Curly Boston" variety and is dominated by red and/or reddish brown hues.

PATENTS

GRANTED JULY 6, 1976

ERRATA

For CLASS	See PATENT NO.
029–194	3,967,355
053–030 R	3,967,423
106–288 B	3,967,563
124–024 R	3,967,609
140–124	3,967,661
242–222	3,967,800
272–070	3,967,820
296–028 C	3,967,859
417–054	3,967,917
526–068	3,968,059
261–077	3,968,086
526–283	3,968,088
526–088	3,968,090
528–503	3,968,091
526–017	3,968,092
526–303	3,968,093
526–914	3,968,094
526–914	3,968,095
526–914	3,968,096
264–343	3,968,198
423–626	3,968,225
260–470	3,968,314
335–230	3,968,470
352–109	3,968,506

PATENTS

GRANTED JULY 6, 1976

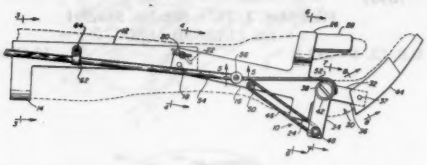
GENERAL AND MECHANICAL

3,967,321

ELECTRICALLY DRIVEN HAND ORTHOSIS DEVICE FOR PROVIDING FINGER PREHENSION

John Patrick Ryan, Indianapolis; James Walter Cowan, Oaklandon; Paul Kent Sharp; Marilyn Elaine Fess, both of Indianapolis, and James L. Babcock, Brownsburg, all of Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Feb. 5, 1975, Ser. No. 547,272
Int. Cl.² A61F *1/00, 5/10*
U.S. Cl. 3—1.1 **20 Claims**



1. An orthosis comprising, in combination:

prehension means for providing grasping capability in conjunction with a disabled extremity of the body of a patient and adapted for attachment to said extremity;

drive means operatively connected to said prehension means and adapted to provide operative prehensile force to said prehension means;

a power source;

control means comprising:

electronic switch means for switching to provide a switch signal in response to touch contact by the patient of a touch sensitive contact means;

oscillator means for oscillating in response to receipt of the switch signal from said electronic switch means;

delay means for providing a time delayed signal in response to oscillation of the oscillator means;

flip-flop means for providing and maintaining a relay signal in response to receipt of the time delayed signal;

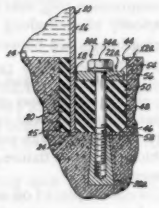
relay means for providing a direction of operation signal to said drive means in response to receipt of the relay signal.

3,967,322

FLUID CONTAINING STRUCTURE

Adam D. Goettl, and Bruce A. Goettl, both of Phoenix, Ariz., assignors to Amoy Research and Development Co., Phoenix, Ariz.

Division of Ser. No. 363,345, May 24, 1973, Pat. No. 3,833,944. This application June 3, 1974, Ser. No. 475,823
Int. Cl.² E04H *3/16*
U.S. Cl. 4—172 **3 Claims**



1. A fluid containing structure comprising:

a. a base having a platform circumscribed by a vertically depending periphery which forms the inner vertical surface of an endless upwardly facing U-shaped in cross section trough, said trough having an endless bottom extending outwardly from the lower end of the periphery of the platform and having an endless outer vertical surface extending upwardly from the outermost end of the bottom of said trough;

b. an endless upstanding wall having the lower end thereof encircling the periphery of the platform of said base in juxtaposed relationship thereto;

c. a resilient compressible gasket interposed between the periphery of the platform of said base and the lower end of said upstanding wall;

d. compression exerting band means encircling the lower end of said upstanding wall in said trough for applying a circumferentially compressive force thereto, said compression exerting band means comprising;

a resilient compressible body positioned within said trough and held thereby in contiguous engagement with the outwardly facing surface of the lower end of said upstanding wall, and

at least a pair of arcuately shaped elongated plates placed in end to end relationship with each other atop the upwardly facing surface of said resilient compressible body; and

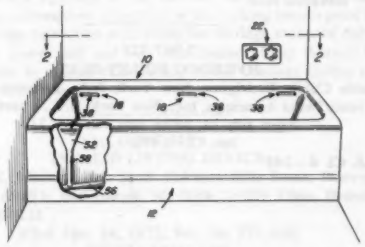
e. draw means mounted at radially disposed spaced increments about the periphery of the platform of said base and engaging said compression exerting band means for causing said compression exerting band means to apply the circumferentially compressive force.

3,967,323

THERAPEUTIC CONSTANT FLOW BATH

Jeannette H. Serio, 27 Orange Ave., Natchez, Miss. 39120

Filed Dec. 31, 1974, Ser. No. 537,659
Int. Cl.² A47K *3/00;* **A61H** *33/00*
U.S. Cl. 4—173 R **8 Claims**



1. A therapeutic constant flow bath, comprising, in combination:

a. a tank forming a container for a liquid bath;

b. inlet means arranged beneath a predetermined normal surface level of the liquid bath for continuously feeding liquid into the tank; and

c. outlet means arranged at the predetermined normal surface level of the liquid bath for continuously draining liquid from the tank, the outlet means including a plurality of outlets connected to a common drain, the outlets being divided into a pair of sets, with each of the outlets of each one of the sets being connected together as well as to the common drain, the tank having a bottom wall and opposed sidewalls extending codirectionally from the

bottom wall, with the outlets being provided in the sidewalls, one of the sets of outlets being disposed in one of the sidewalls and the other of the sets of outlets being disposed in the other of the sidewalls, with the inlet means being arranged adjacent the sidewalls.

3,967,324

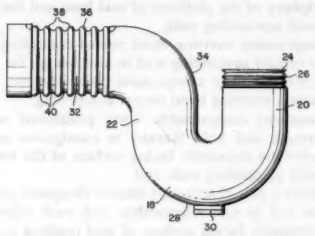
FLEXIBLE TRAP FOR A WASTE LINE ASSEMBLY

Ernest Gene Olive, Maspeth, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 2, 1975, Ser. No. 574,014

Int. Cl.² E03C *1/00*

U.S. Cl. 4—207 **3 Claims**



1. A one piece flexible trap adapted to be received in a waste line assembly which comprises:

a. a U-shaped portion having a pair of upwardly extending legs, a lower section having a threaded hole therethrough, one said leg being longer than other said leg, an upper end of one said leg having a threaded outer surface;

b. a linear portion having a corrugated section therein, one end of said linear portion joined in a smooth curved continimum to an upper end of said other leg of said U-shaped portion, said U-shaped portion and linear portion having a continuous bore therethrough, said corrugation section including a plurality of alternate annular ribs and channels; and

c. a threaded plug member threadably engaging into said threaded hole.

3,967,325

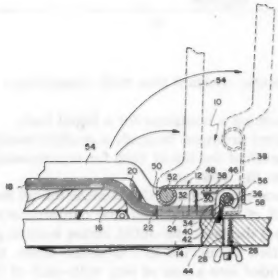
HYGIENIC TOILET-SEAT

Ennio Chinio Rodriguez, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 11, 1975, Ser. No. 595,213

Int. Cl.² A47K *13/14*

U.S. Cl. 4—245 **2 Claims**



1. A cover apparatus for maintaining a stack of sanitary sheets overlaying a toilet seat comprising a holder for receiving a margin of said stack of sanitary sheets, means for mounting said holder in back of said toilet seat, a cover member pivotly mounted on said holder, said cover member being rotatable between a generally horizontal orientation for capturing said sheet margin and a generally vertical orientation for exposing said sheet margin to enable replacement of said sheets, spring means for urging said cover member to a horizontal orientation and resilient catch means carried by said cover member for maintaining said cover member in a vertical orientation against the urging of said spring means.

3,967,326

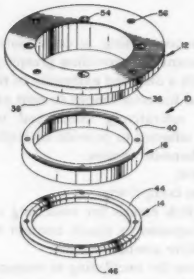
FLANGE ASSEMBLY FOR INSTALLING A TOILET FIXTURE

Johnny Lee Tammen, 420 Cauley Lane, San Angelo, Tex. 76901

Filed Mar. 3, 1975, Ser. No. 554,591

Int. Cl.² E03D *11/00*

U.S. Cl. 4—252 R **10 Claims**



1. In a toilet fixture supported by a support surface in overlying relationship respective to a soil pipe which has a free marginal end portion extending through the support surface to leave an annulus between the soil pipe and the support surface, so that the toilet fixture is arranged in spaced axially aligned relationship respective to a sanitary waste discharge from the fixture, the improvement comprising:

a mounting flange assembly by which the fixture is attached to the support surface and soil pipe; said mounting flange assembly comprising a horizontally disposed flange having a minor and major diameter and opposed upper and lower faces, a downwardly depending cylindrical skirt affixed to said minor diameter of said flange and arranged normally to the lower face thereof; a terminal free end of said skirt forming a face which is disposed parallel to said upper face;

a resilient gasket, a compression ring; said skirt, gasket and ring being concentrically aligned along a common axis with said gasket being interposed between said ring and said terminal free end of said skirt;

apertures formed through said flange, skirt, gasket, and ring to form a bolt receiving passageway which is radially spaced from and parallel to the axial centerline of said skirt; a tension bolt received through said apertures;

fastener means by which the toilet fixture is affixed to the mounting flange assembly;

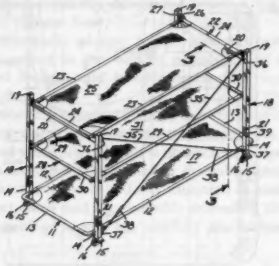
means by which tension can be placed on said bolts to force said resilient gasket into engagement with said skirt and said ring, to cause radial expansion of said resilient gasket so that it completely fills a marginal length of said annulus and thereby releasably affixes the toilet fixture, soil pipe, horizontally disposed flange, and support surface to one another.

3,967,327

FOLDABLE BED

Harvey M. Severson, 8418 Dupont Ave. South, Minneapolis, Minn. 55420

Filed Feb. 10, 1975, Ser. No. 548,687
Int. Cl.² A47K 4/00, 11/00
U.S. Cl. 5—9 B 5 Claims



1. A foldable bed comprising:

a. a horizontal generally rectangular base frame having a pair of support legs adjacent each of the ends thereof;

b. a pair of end frames each disposed at an opposite end of said base frame, each end frame including a pair of laterally spaced parallel posts and a cross member secured at its opposite ends to said posts adjacent one end of the posts;

c. means pivotally connecting the posts of each end frame at their other ends to different ones of said legs at a respective end of said base frame on aligned horizontal axes extending transversely of the base frame for swinging movements of said end frames between folded inoperative horizontal positions in upwardly spaced relation to said base frame and vertically disposed operative positions;

d. an elongated generally rectangular top frame disposed laterally between the posts of said end frames and adapted to be moved between an operative position overlying said cross members and an inoperative position closely overlying said base frame whereby, when said top frame is moved to its inoperative position, said end frames will be disposed in overlying relation to said top frame when moved to their folded inoperative positions;

e. mounting means including said cross members, hooks and hook-receiving loops on respective ones of said posts and top frame, detachably securing said top frame to said end frames against relative longitudinal and lateral movements therebetween;

f. brace means between said base frame and said end frames in said operative positions of the end frames;

g. and individual body supporting means carried by said base and top frames.

3,967,328

LOAD LIFTING AND TRANSFERRING DEVICE WITH MULTIPLE POWERED BELTS

Ellis V. Cox, 18601 S. Pear Road, Oregon City, Oreg. 97045

Filed Sept. 6, 1974, Ser. No. 503,710
Int. Cl.² A47B 83/04; A61G 1/02
U.S. Cl. 5—81 R 12 Claims

1. A load-lifting and transporting device comprising in combination,

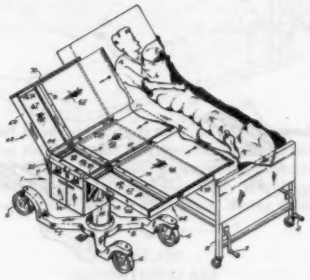
a wheel-supported base,

a cabinet adjustably carried by said base and positionable upwardly therefrom, roll means mounted on said cabinet adjacent one edge thereof,

a carriage supported by said cabinet and forwardly extensible past said one edge of the cabinet into engagement with the object to be lifted, said carriage including a plate hingedly mounted at one of its ends to the carriage, a belt entraining roller at the distal end of said plate, a power roll, a load contacting belt entrained on the power roll and plate mounted roller and having top and bottom runs, the bottom run of said belt in supported contact with the cabinet mounted roll means during extension and retraction of the carriage, said plate also supported by said cabinet roll means,

powered means concealed within said cabinet coupled with said carriage and imparting forward and rearward movement thereto, and

belt control means including fixed axis, cable reels mounted adjacent opposite sides of said cabinet, a carriage-mounted cable reel in driving connection with said car-



riage power roll, said belt control means further including a continuous cable a lower run of which directly interconnects the cabinet-mounted cable reels, an upper run of the cable additionally entrained about said carriage mounted cable reel, operator controlled locking means for locking one of said cabinet-mounted reels against rotation whereupon forward extension of the carriage toward an object to be lifted will cause rotation of said carriage-mounted cable reel and said carriage power roll and hence movement to the load contacting belt in a direction opposite to the forward movement of the carriage, subsequent unlocking of the locking means prior to carriage retraction permitting the carriage mounted cable reel, power roll and belt with loaded object thereon to remain in a fixed relationship to the carriage during retraction of same.

3,967,329

INVALID LIFTING DEVICE

Robert E. Whitton, Jr., 5155 Thirteen Mile Road, Warren, Mich. 48092, and Harold M. Stith, 16559 Ohio, Detroit, Mich. 48221

Filed Apr. 24, 1975, Ser. No. 571,418
Int. Cl.² A61G 1/02
U.S. Cl. 5—92 5 Claims

1. A device for aiding a first person in raising a second person from a seated position to a standing position, said device including a first part shaped to conform to and adapted

to be attached to and carried by a knee of the first person and a second part shaped to conform to and adapted to attach to the knee of the second person whereby a fixed spaced relationship between the knees of the two persons is maintained while the first person moves the upper part of the second person from a bent seated position to a straight standing position.

3,967,330

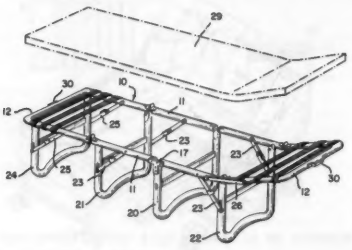
FOLDING BED

Bohdan Zawadowsky, Islington, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 21, 1975, Ser. No. 566,619

Int. Cl.² A45F *1/00*

U.S. Cl. 5—114 **7 Claims**



1. A folding bed, comprising a substantially rectangular frame adapted to carry body supporting means in the plane thereof and articulated longitudinally into two central sections and two end sections; a central U-shaped leg having the upper free ends thereof secured to the vertical stems of a pair of T-shaped brackets, the two central sections of the frame being pivotally attached to the lateral arms of said T-shaped bracket so as to be foldable downwardly to lie against said central leg; the two end sections of the frame being pivotally attached to their adjacent central sections and foldable upwardly to lie against said central sections; longitudinally spaced legs pivotally attached to each central section remote from and on the opposed longitudinal sides of said central leg and foldable upwardly to lie against said central sections; a further leg pivotally attached to one of the end sections remote from the leg of the adjacent central section and foldable upwardly to lie against said end section; and means for releasingly securing the other of the end sections in a plane inclined to the plane of the frame.

3,967,331

SPRINGLESS BED SPRING

Arthur R. Glassman, Torrance, Calif., assignor to De Lamar Bed Spring Corporation, Los Angeles, Calif.

Filed Apr. 17, 1975, Ser. No. 569,108

Int. Cl.² A47C *23/06*

U.S. Cl. 5—236 R **1 Claim**

1. In a box spring, the sub-assembly comprising:

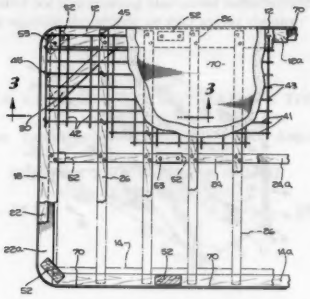
a rigid upper rectangular wooden frame assembly having parallel side pieces and a plurality of slats disposed in spaced parallel relationship upon said side pieces, the ends of said slats being secured to respective ones of said side pieces;

a lower rectangular wooden frame;

a wire mesh panel which is substantially coextensive with said upper wooden frame, being disposed upon said slats, said wire mesh panel including spaced parallel longitudinal wires and spaced parallel transverse wires, the spacing between adjacent ones of said parallel wires being less than the spacing between adjacent ones of said slats;

a plurality of fasteners in spaced locations on said wire mesh panel and securing corresponding wire portions thereof to the respectively adjacent upper surface portions of said wooden slats;

whereby a relatively thick insulating pad may be placed upon said wire mesh panel for providing a box spring assembly; and and



a plurality of vertically extending wooden blocks attached to the underside of said upper frame and extending downwardly therefrom to said lower frame, whereby said upper frame is rigidly supported in elevated relationship to said lower frame.

3,967,332

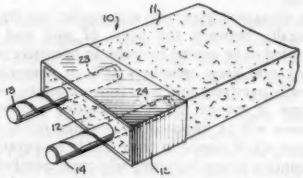
COMPOSITION BOARD UPHOLSTERY RAIL

Handley H. Fincher, Morganton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 456,963, April 1, 1974, abandoned. This application Oct. 9, 1975, Ser. No. 621,215

Int. Cl.² A47C *19/00*

U.S. Cl. 5—286 **2 Claims**



1. A rail for the frame of an upholstered article of furniture adapted to receive upholstery material, said rail comprising a body of composition board consisting essentially of fiberboard or essentially of particle flakeboard having at least one end for joining said rail to said frame, at least one dowel secured within a bore in said one end of said body and projecting therefrom, and a seamless unitary band of reinforcing material in the form of a sleeve having significant tensile strength and encircling said body with a press fit adjacent said one end for preventing said composition board from splitting in the vicinity of said dowel in response to lateral force applied to said dowel.

3,967,333

BABY FEEDING DEVICE

Mervin S. Boyd, Scarborough, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y. and Allan Krystie, Agincourt, Canada, part interest to each

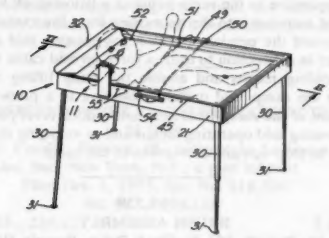
Filed Nov. 29, 1974, Ser. No. 528,255

Int. Cl.² A47C *21/00*

U.S. Cl. 5—317 R **3 Claims**

1. A baby feeding bed, which comprises:

a. a one piece plastic molded body having a bottom base, two upwardly extending sidewalls and two upwardly extending end walls joined to said bottom base, said sidewalls and said end walls joined at beveled angles to said bottom base, one said end wall of said facing having an aperture therethrough;
b. rectangularly shaped facing, said facing joined to the top edges of said sidewalls and said endwalls, said facing extending vertically downward below a horizontal plane of said bottom base;
c. a horizontally placed board, said horizontally placed board joined to the bottom edges of said rectangularly shaped facing, said board having four opening therethrough;
d. four sleeve brackets, one said sleeve bracket affixed to a bottom corner of said bottom base, one said sleeve bracket vertically aligned with each said opening;
e. a two sectional telescopic leg assembly having a bottom base foot memberly slidably mounted in each said sleeve bracket, each said leg assembly extending through one of said openings in said horizontally placed board;



f. a horizontally placed plunger rod slidably contained within said aperture of said facing;
g. a knob handle affixed to an outer end of said plunger rod;
h. a spring assembly affixed to an inner end of said plunger rod between said horizontally placed board and said bottom base of said body;
i. a vertically placed plate affixed to said spring assembly, said plate engaging said base of said body upon inward movement of said plunger rod causing said one end wall of said body to left vertically upward while another end of said body remains stationary;
j. a mattress inserting into said body;
k. a cylindrical reel assembly affixed to a first sidewall portion of said facing;
l. a belt having a free end communicating with said cylindrical reel assembly, said belt adapted to engage a baby laying on said mattress;
m. a clamp assembly affixed to a second sidewall portion of said facing said clamp assembly engaging said free of said belt;
n. a bottle holding device communicating with said bed, said bottle device adapted to hold a bottle therein.

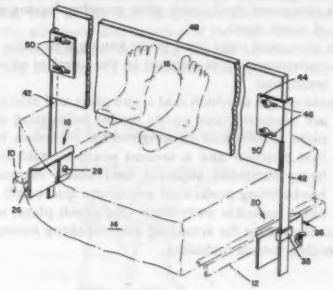
3,967,334

HOSPITAL BED FOOTBOARD ASSEMBLY

Maurine E. Ricke, 153 Smith Road, and Vern S. Ryan, 2565 Stone Valley Road, both of Danville, Calif. 94526

Filed Mar. 31, 1975, Ser. No. 563,652
Int. Cl.² A47C *21/00*
U.S. Cl. 5—319 **3 Claims**

1. A footboard assembly comprising: a footboard; a pair of opposed vertical supports secured to the ends of said footboard; a pair of support brackets each receiving one of said vertical supports and removably secured to a framerail of a bed, each support bracket including a horizontal member adapted to rest on a frame rail of a bed and a vertical member depending from said horizontal member; a clamping plate adjustably secured to said vertical member, said clamping plate including a lower portion angularly offset toward said vertical member and a lower edge impinging on said vertical member, said clamping plate including an upper portion



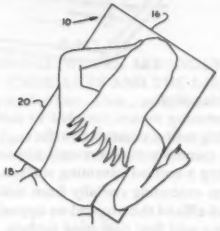
spaced apart from said vertical member and opposed thereto for receiving the frame rail therebetween, said vertical member includes a collar extending outwardly therefrom, said collar includes a slot extending vertically therethrough for receiving one of said vertical supports in sliding fashion.

3,967,335

SUNBATHING AID

Lula L. Rhoads, Rte. 1, Slaton, Tex. 79364

Filed Mar. 14, 1974, Ser. No. 450,980
Int. Cl.² A47G *9/00*
U.S. Cl. 5—338 **4 Claims**



1. A cushion to support the bosom and head of a sunbathing woman lying upon her stomach comprising
a. a thick sheet of soft, resilient material,
b. said sheet of sufficient length to extend from the waist to above the head,
c. two holes extending through the material to fit under the mammary glands,
d. the top of the holes at about the mid-point of the length of the cushion,
e. the thickness of the cushion being uniform and about 40% of the diameter of each hole,
f. the distance between the holes being about 2 inches, and
g. the cushion covered with terry cloth.

3,967,336

PUNCHING AND BINDING APPARATUS

James W. Cutter, Los Altos, Calif., assignor to NSC International Corporation, Hot Springs, Ark.

Filed Apr. 14, 1975, Ser. No. 567,622
Int. Cl.² B42C *19/00*
U.S. Cl. 11—1 AC **12 Claims**

1. Punching and binding apparatus, comprising:

punching means for punching apertures along an edge of a stack of sheet material;

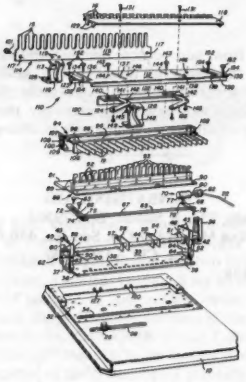
binding means for inserting the flexible fingers of a comb binder through the punch apertures for binding the sheet material together and including,

an elongated rigid comb plate member having a plurality of comb teeth,

an elongated rigid hook plate having a plurality of hooks corresponding in number to the number of said comb teeth, and

guide means to which said comb plate and said hook plate are mounted, said guide means permitting said comb plate to move in its longitudinal direction between a first position and a second position, said hook plate being mounted adjacent said comb means with its hooks being positioned proximate said comb plate and being movable away from said comb plate; and

actuating means for actuating said punching means and said binding means including,



an actuating shaft,

a first camming means coupled to said comb plate and including a first camming surface,

a second camming means coupled to said hook plate and including a second camming surface,

a first arm extending radially from said shaft and having one end affixed thereto and an opposite end cammingly engaging said first camming surface, and

a second arm extending radially from said shaft and having one end affixed thereto and an opposite end cammingly engaging said second camming surface;

whereby rotation of said shaft in one direction actuates said punching means and rotation of said shaft in the opposite direction causes said first arm to move said first camming means which in turn moves said comb plate from said first position to said second position and rotation of said shaft in said opposite direction also causes said second arm to move said hook plate away from said comb plate.

3,967,337

RETURN TO DOCK LEVEL MECHANISM FOR A DOCKBOARD

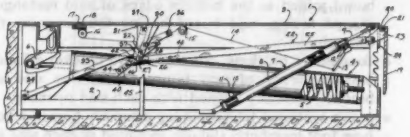
Thomas G. Artzberger, Menomonee Falls, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Mar. 25, 1975, Ser. No. 561,972

Int. Cl.² B65G *11/00*

U.S. Cl. 14—71.7 **17 Claims**

1. A dockboard, comprising a supporting structure, a ramp hinged at its rear end of the supporting structure, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an outwardly extending position where the lip forms an extension to the ramp, ramp lifting means operably connected to the ramp for pivoting the ramp upwardly from a horizontal position to an upwardly inclined position, releasible holding means interconnecting the ramp and the supporting structure for preventing upward movement of said ramp unless released but permitting free downward movement of the ramp, said holding means including a flexible operating cable, lip lifting means operably connected to the lip for moving the lip from the pendant position to the extended position, an operating member pivot-



ally carried by the ramp and secured to said operating cable, operating means operably connected to the operating member and responsive to the ramp being at a below dock level position and responsive to the lip moving from the extended position toward the pendant position for pivoting said operating member in a direction to exert a force on said cable to release said holding means and enable the ramp lifting means to elevate the ramp, and means responsive to a predetermined elevation of the ramp from said below dock level position for deactivating said operating means and re-engaging the holding means to stop upward movement of the ramp.

3,967,338

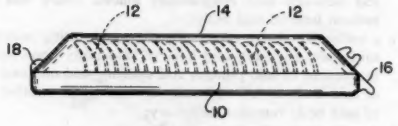
BRUSH ASSEMBLY

Marty M. Russell, 254 N. Clark Drive, Beverly Hills, Calif. 90211

Filed June 30, 1975, Ser. No. 591,658

Int. Cl.² A46B *9/02*

U.S. Cl. 15—185 **2 Claims**



1. A brush assembly including: a one-piece base member; a plurality of bristles formed of resilient synthetic material set in the base member in a perpendicular upright position thereon; and a one-piece flat cover mounted on the base member and movable between an open position and a closed position to enclose the bristles when the brush assembly is not in use, said cover being in sufficiently close proximity with the upper ends of the bristles when in its closed position to cause the bristles to bend over from their upright position into the plane of the base member, and the cover being shaped to form a handle for the brush when in its open position.

3,967,339

ROLLER FOR REMOVING WATER FROM AND SIMULTANEOUSLY DRYING HARD SURFACES

C. Ray Newman, Houston, Tex., assignor to Rol-Dri, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 412,230, Nov. 2, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,124

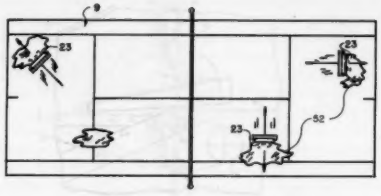
Int. Cl.² A47L *13/11*

U.S. Cl. 15—244 A **1 Claim**

1. A liquid-removing device adapted to remove a liquid body lying on a substantially flat hard surface, said device comprising:

a carriage;

a resilient foam roller having a high abrasion-resistance and being characterized by a compression load density between 20 to 60 pounds, by a density between 1 to 4 pounds per cubic foot, by a porosity between 50 to 100 pores per linear inch, by a tear strength between 0.25 to



0.45 pounds per inch, by an elongation factor between 100 to 400%, and by a tensile strength between 15 to 40 pounds per square inch; and

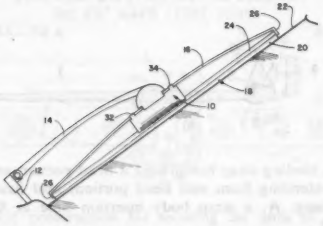
means rotatably supporting said roller on said carriage whereby, in use, a moving seal is established between said roller and said surface.

3,967,340

WINDSHIELD WIPER PRESSURE DISTRIBUTION BLOCK

Charles F. Cmolik, Berwyn, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 1, 1975, Ser. No. 618,320
Int. Cl.² B60S *1/02*
U.S. Cl. 15—250.42 **3 Claims**



1. A device for distributing the pressure applied to an elongated windshield wiper squeegee, having a blade portion projecting from a backing portion, by an arcuate holder arm carrying opposite ends of the squeegee comprising a block dimensioned to be wedged between the centers of the holder arm and the backing portion of the squeegee, groove means in said block dimensioned for engagement about the backing portion, and tie means carried by said block, for fastening about said holder arm.

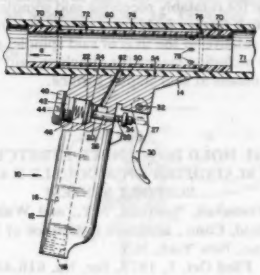
3,967,341

VACUUM AND COMBINATION VACUUM/BLOW MEANS

Linus A. Gavin, Box 136, Bagg Road, Chesterfield, Mass. 01012

Filed Aug. 14, 1975, Ser. No. 604,638
Int. Cl.² A47L *5/14, 5/16*
U.S. Cl. 15—345 **3 Claims**

3. In an air gun converted to a suction cleaner and having an air inlet connected to a source of pressurized air and an air outlet and a trigger actuated valve means therebetween, the improvement comprising: a tubular longitudinally extending barrel mounted on the air gun and having opposite forward and rearward extremities and an opening in the wall thereof coaxially aligned with the air outlet, a tubular flow interrupter sealingly sleeved within the barrel and having an outer peripheral recess inboard of its opposite ends defining a sealed annular air space in communication with the barrel opening, a plurality of spaced circumferentially-arranged angularly inclined rearwardly directed flow reversal openings extending through the wall of the flow interrupter and communicating between the air space and interior of the flow interrupter for bleeding pressurized air from the former to the latter while reversing the direction of flow thereof through the barrel and



toward the rearward barrel extremity while generating a suction at the forward barrel extremity, a rotatable selector valve means receivable within the air gun and in communication with the trigger actuated valve means and being actuatable for closing off the air outlet, a tube having a forward nozzle end and being connectible at its opposite end of the selector valve means and extendable to a point of adjacency to the forward barrel extremity and serving as a passage for the pressurized air from the trigger actuating valve means to the forward nozzle end.

3,967,342

SUSPENDED SWIVEL WHEEL ARRANGEMENT FOR BABY CARRIAGES AND THE LIKE

Albert W. Gebhard, Boulder, Colo., assignor to Gerico, Inc., Boulder, Colo.

Filed Jan. 13, 1975, Ser. No. 540,320
Int. Cl.² B60B *33/00*
U.S. Cl. 16—48 **6 Claims**

1. Movable suspension apparatus for a wheeled vehicle comprising:

a horizontal wheel axle,

a pair of wheels rotatably mounted in spaced relation to one another on said axle,

at least one arm rotatably mounted at one end on said axle inwardly of said wheels,

a vertical mounting spindle having an upper and lower section, said lower section rotatably mounted to the other end of said arm and having an upper shoulder between said upper and lower sections,

means mounted on said arm for resiliently restricting the rotation of said spindle relative to said arm, and

sleeve means attached to the vehicle and rotatably mounted on said upper section of said spindle for applying the weight of said vehicle on said spindle shoulder and retaining said spindle in a substantially upright position, said sleeve means and at least said lower section of said vertical mounting spindle being constructed of durable materials having characteristics of low sliding friction therebetween and wherein said sleeve means has a bore therethrough for rotatably receiving said spindle upper section and which further includes a weight-transmitting surface sloped relative to the axis of said spindle, said apparatus further including means for attaching said vehicle to said sleeve means at said sloped surface.

3,967,343

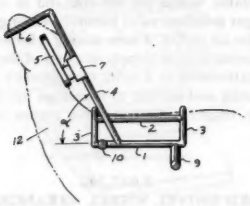
ANIMAL HOLD DOWN/NECK STRETCHER FOR KOSHER SLAUGHTER ON A DOUBLE-RAIL ANIMAL SUPPORT SYSTEM

Rudy G. Westervelt, Newfield, N.Y., and Walter Giger, Jr., Wethersfield, Conn., assignors to Council of Livestock Protection, Inc., New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,463

Int. Cl.² A22B *5/02*

U.S. Cl. 17—1 A **1 Claim**



1. A neck stretching and body restraining frame, comprising

a pair of parallel inner bars;

a pair of parallel outer bars;

a circularly shaped cross bar interconnecting said inner and outer bars;

a pair of parallel holding bars extending at an angle from one end of said interconnected outer bars;

a jaw holder means comprising a circularly shaped extension connected to the unconnected ends of said parallel holding bars and extending perpendicular thereto in a direction opposite said inner and outer bars;

a neck restraining means comprising flexible double strips connected between said parallel holding bars and located between said extensions and said outer bars and being sufficiently spaced to hold the neck of an animal; and

outwardly extending bearing connected to said outer bars for movably holding said frame on the back of said animal.

3,967,344

TRANSITION FOR ANIMALS TO BE SLAUGHTERED ON DOUBLE-RAIL SYSTEM

Ralph P. Prince; David H. Johnson, both of Storrs, and Walter Giger, Jr., Wethersfield, all of Conn., assignors to Council of Liverstock Protection, Inc., New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,468

Int. Cl.² A22B *5/02*

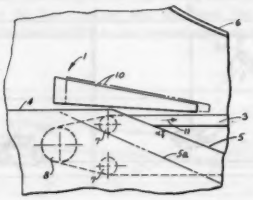
U.S. Cl. 17—1 A **3 Claims**

1. A transition arrangement for transferring an animal from a chute to a conveyor, comprising

a horizontal platform;

a ramp inclined downward from said platform;

a triangular wedge having a sloping top surface located above said platform and above said ramp; said triangular wedge having the shape of a truncated triangle with the upper end thereof being between a pair of said conveyors and the bottom end thereof above said platform;



means for moving said wedge horizontally whereby said animal attempting to step on said conveyors will step on said wedge and slip and slide on said ramp and go upright onto said conveyors with its legs straddling said conveyors; and

cover means disposed above said wedge at a distance about equal to the rump dimension of said animal for prevent said animal from stepping on said conveyors.

3,967,345

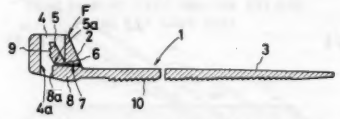
BINDING STRAP

Yasukichi Sumimoto, Tokyo, Japan, assignor to Tokyo Style Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1975, Ser. No. 548,170

Int. Cl.² B65D *63/00*

U.S. Cl. 24—16 PB **4 Claims**



1. A binding strap comprising a head portion and a strap body extending from said head portion, said head portion comprising: A. a strap body insertion hole at the center thereof;

B. a tongue joined to an inner wall of said insertion hole by a flexible junction, the bottom face of said tongue being flat;

C. a support means facing said bottom face of the tongue;

D. there being slit between said support means and said bottom face of the tongue, said slit passing through said head portion between said strap body insertion hole and the exterior of said head; and

E. saw blade teeth formed on one face of said tongue, wherein said strap body has saw blade teeth on one face thereof for engaging said teeth of the tongue to hold said strap within said head portion.

3,967,346

DISPLAY RACK CLIP

Bruce Young, Jr., 105 Masters Road, Hixson, Tenn. 37343

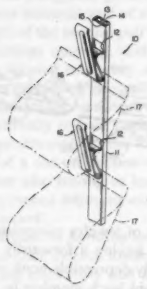
Filed Sept. 5, 1974, Ser. No. 503,489

Int. Cl.² A47F *5/10*

U.S. Cl. 24—73 B **14 Claims**

1. A display rack clip for supporting articles, such as bags of chips and the like, for display and sale to the public, comprising a substantially S-shaped spring clip having first and second end portions and an intermediate portion and first and second curved portions joining the intermediate portion with a respective end portion, one end portion adapted to be inserted through a clip-receiving opening in a support member

for yielding but firm engagement of an adjacent one of said curved portions against said support member to releasably grip an article therebetween, and the other of said end portions comprising a lever for disengaging said one curved portion from the support member to release the article, said one



end portion including two angularly offset portions and an axially extending tip portion which engages one face of the support member to urge said second end portion and said intermediate portion relatively apart for effecting a secure clamping action between said first curved portion and the support member.

3,967,347

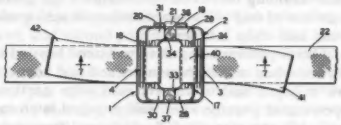
BUCKLE CONSTRUCTION

George J. Bickis, Sr., Massillon, Ohio, assignor to Indenco, Inc., Massillon, Ohio

Filed Mar. 27, 1975, Ser. No. 562,793

Int. Cl.² A44B *11/00*, *11/02*

U.S. Cl. 24—74 A **8 Claims**



1. Buckle construction for securing the ends of flexible strapping about an object, including

a. a rectangular base having a pair of opposite side members and a pair of opposite end members forming a single rectangular aperture therebetween;

b. first and second individual posts formed integrally with the base, each of said posts projecting upwardly from the midpoint of a respective one of the base end members;

c. a pair of spaced fingers movable between open and closed positions, each of said fingers having a straight bar-like portion terminating in end portions, with said end portions each having an inner surface;

d. individual strips of flexible material hingedly connecting the fingers to one of the end members;

e. the fingers extending in spaced parallel relationship outwardly from the said one base end member when in open position with the inner surfaces of opposite finger end portions forming spaces therebetween, and with the width of said spaces being predetermined and generally equal to the width of the posts;

f. the fingers being foldable individually toward the base in a direction generally transverse to the end members and parallel with the side members when moving from open to closed position;

g. the posts being located each in a respective space between the finger end portions when the fingers are in closed strap engaging position; and

h. the finger inner end surfaces engaging the respective interposed post during tensioning of the strapping to equally distribute the tensioning force on the fingers and posts.

3,967,348

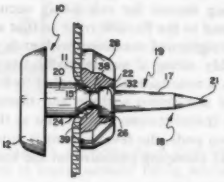
BUTTON STRUCTURE

Neil E. Rogen, 3 Beaver Dam Road, Upper Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 387,390, Aug. 10, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,151

Int. Cl.² A44B *1/34*, *1/44*

U.S. Cl. 24—90 E **9 Claims**



1. A button structure comprising:

a. a simulated button;

b. a shank attached to the simulated button having an elongated post attached to said button, a pointed portion on the opposite end of said shank and an intermediate collar joined to said post and said pointed portion by reduced cross sections forming first and second grooves respectively, said post having an enlarged cross section relative to the collar and pointed portion, said pointed portion being adapted to be broken off at said second groove; and

c. an essentialy annular fastening member having an enlarged recess for containing said collar, terminating in an inwardly protruding lip defining a concentric passage having a diameter smaller than said collar and said post, a pair of oppositely spaced radial slots extending inwardly from the edge of the fastening member, one slot extending to said passage and recess whereby said passage may be resiliently opened and closed to fit over said collar, said lip having a thickness which is substantially equal to the length of the first groove whereby fabric is adapted to be clamped in said first groove by said lip.

3,967,349

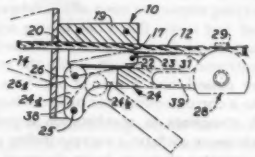
CLAMP FOR FLEXIBLE ROPE

Donald E. Christensen, Orofino, Idaho, assignor to David Gladhart, Pierce, Idaho, a part interest

Filed Apr. 11, 1975, Ser. No. 567,289

Int. Cl.² F16G *11/00*

U.S. Cl. 24—134 KC **4 Claims**



1. A self-tightening clamp assembly for flexible rope, comprising:

a clamp body defining a straight longitudinal opening extending therethrough from a front to a back end for receiving a portion of a flexible rope so that the ends

thereof extend forward and backward of the clamp assembly;

a clamp surface mounted to the clamp body to extend longitudinally along one side of the opening;

clamp plate means pivotably mounted to the clamp body on an opposite side of the opening with a smooth clamp plate surface for pivoting about a first axis to engage the rope and clamp it against the clamp surface;

lever means mounted to the clamp body for pivotal movement about a second axis spaced longitudinally from the first axis with one end operatively connected to the clamp plate and a remaining end projecting rearwardly from the clamp plate body for pivoting the clamp plate toward and away from the clamp surface in response to pivotal movement of the remaining lever end;

connecting means for releasably securing the remaining lever end to the flexible rope so that as the rope is moved to a straightened condition with ends protruding from the assembly along a substantially straight line, the lever means is automatically operated to force the clamp plate toward the clamp surface and thereby clamp the rope tightly therebetween and so that as the rope is slackened between ends, the lever means is automatically operated to relax clamping pressure on the rope.

3,967,350

SLIDER FOR HEAVY DUTY SLIDE FASTENERS

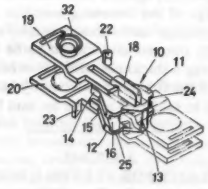
Teruaki Kawashima, Namerikawa, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Mar. 26, 1975, Ser. No. 562,237

Claims priority, application Japan, Apr. 6, 1974, 49-39218[U]

Int. Cl.² A44B *19/30, 19/36*

U.S. Cl. 24—205.14 R **1 Claim**



1. In a slider for a slide fastener of the type having a pair of stringers carrying respective rows of interengageable fastener elements and end stops, the slider having upper and lower wings connected to define a generally Y-shaped guide channel having an entrance end through which the rows of fastener elements are passed, and a pair of pull tabs each pivotally connected to a corresponding one of said wings, the improvement which comprises in combination a pair of matching connector elements each on a corresponding one of said pull tabs, said connector elements being disposed for releaseable engagement to secure the pull tabs together when said pull tabs are pivoted toward each other; and a locking member projecting from each of said pull tabs, each locking member being disposed to engage a corresponding end stop when the slider is positioned to receive said end stops at the entrance end of the quide channel and the pull tabs are secured together by said connector elements.

3,967,351

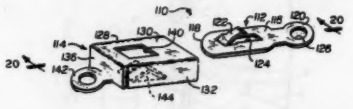
CLASP

Melvin Rosenberg, and Sheldon Brickner, both of New York, N.Y., assignors to Melvin Rosenberg and Morris Schwartz, both of North Woodmere, N.Y.

Filed Apr. 18, 1975, Ser. No. 569,259

Int. Cl.² A44B *17/00*

U.S. Cl. 24—230 SC **12 Claims**



1. A clasp for an article of jewelry comprising:

a. a thin latch member having a forwardly insertable end portion and a resiliently depressible hook portion projecting outwardly from said latch member to form an open-ended passage between said hook portion and said latch member, said hook portion extending rearwardly of said insertable end portion and being disposed for movement from a normally extended position to a flexed position in the direction toward said latch member;

b. a keeper member having thin spaced walls defining an opening of smaller dimension than the corresponding dimension of said latch member when said hook portion is in its extended position and through which the latch member may be inserted or withdrawn when said hook portion is in its flexed position;

c. retaining means positioned at a pre-selected location on said keeper member engageable with said hook portion upon insertion of said latch member to permit said hook portion to move to its extended position for fastening said clasp;

d. said retaining means comprising an edge portion of at least one of said walls located adjacent said hook portion when said clasp is fastened;

e. said hook portion being sized to extend beyond said edge portion when said latch member and said keeper member are engaged and to receive said edge portion in said open-ended passage when said engaged latch member is moved in the direction of withdrawal from said keeper member to prevent movement of said hook portion to its flexed position;

f. said keeper member extending beyond said retaining means a distance greater than the length of said latch member received therein when said hook portion is engaged with said retaining means and extends beyond said edge portion thereof to permit additional movement of said latch member relative to said keeper member in the direction of insertion;

whereby said clasp is unfastened by moving said latch member in the direction of insertion in said keeper member to disengage said hook portion from said retaining means and then moving said hook portion to its flexed position to permit said latch member to be withdrawn through the opening in said keeper member.

3,967,352

METHOD FOR MAKING A SCROLL TYPE HOUSING FOR A CENTRIFUGAL BLOWER

Kenneth Crowe, Simsbury, Conn., assignor to Torin Corporation, Torrington, Conn.

Filed June 17, 1975, Ser. No. 587,644

Int. Cl.² B23P *15/00*

U.S. Cl. 29—156.4 R **9 Claims**

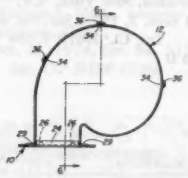
1. A method for making a scroll type housing for a centrifugal blower, said method comprising the steps of:

a. providing a flat discharge plate constructed of sheet material with a rectangular discharge opening therethrough,

b. forming at least one integral side plate attachment means adjacent each of a first pair of opposing parallel edges of the discharge opening,

c. providing an elongated generally flat scroll member of flexible sheet material and of a width aproximately equal to the length of the second pair of parallel opposing edges of said discharge opening, said member having a narrow end flange formed integrally along each end edge, and said flanges projecting generally at right angles from the member and in the same direction, said member also having a generally reverse bend adjacent one end portion at least approximately in the form of a desired final configuration of a cut-off section of the scroll housing, and said member also having at least one integral side plate attachment means adjacent each side edge and between the ends thereof,

d. gradually arcuately bending said scroll member to bring the opposite ends thereof toward each other with said end flanges facing outwardly and in opposite directions and until the overall dimension between inner and outer edges of opposite flanges is less than the distance between said second pair of opposing edges at said opening in said discharge plate,



e. entering the flanged end of said scroll member in said discharge opening with said end flanges extending parallel with said second pair of opposed edges and thereafter allowing said member to flex outwardly whereby to assemble the scroll member and discharge plate with said second pair of opposing edges engaging and restraining the scroll member against outward springing movement, and with said end flanges flatly engaging the discharge plate on the side opposite the body of the scroll member to prevent withdrawal of the member from the discharge opening,

f. providing a pair of similar flat side plates of sheet material with a scroll configuration at their periphery and a transverse linear edge at their discharge ends, each side plate having at least one integral attachment means adapted to cooperate with said scroll attachment means and at least one integral attachment means adapted to cooperate with said discharge plate attachment means,

g. and respectively entering said plates in opposite side openings of the scroll member with each plate having its linear discharge edge in engagement with the discharge plate and each of plate having its scroll and discharge plate attachment means engaged respectively with a corresponding scroll and discharge plate attachment means.

3,967,353

GAS TURBINE BUCKET-ROOT SIDEWALL PIECE SEALS

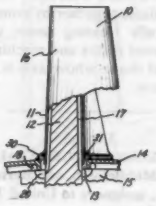
Gasper Pagnotta, Rexford, and John H. Eskesen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 18, 1974, Ser. No. 489,799

Int. Cl.² B23P *15/04*

U.S. Cl. 29—156.8 R **4 Claims**

1. In the method of assembling a fluid-cooled gas turbine including the steps of locating buckets in their respective openings in a platform and securing the buckets to a turbine disc, the combination of the steps of shaping the platform to provide space of width from 0.005 to 0.040 inch between the buckets and the platform within the bucket openings, placing a wire in contact with the upper surface of the platform around the periphery of each bucket-receiving opening and in contact with an annular portion of the bucket skin above the platform, spot-welding each so located wire to the platform



and to its respective bucket, covering each spot-welded wire around its length and at least partially filling annular spaces between each said wire and the bucket and the platform with a mixture of powdered braze alloy and binder, firing the assembly to melt the braze while maintaining the braze outside the bucket openings in the platform, and cooling and solidifying the braze in situ and thereby sealing each bucket fluid-tightly to the platform.

3,967,354

HEAT EXCHANGER

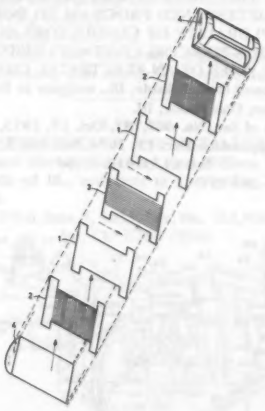
Hendrik Alphons Jaspers, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,363

Claims priority, application Netherlands, Mar. 26, 1963, 7304161

Int. Cl.² B23P *15/26*

U.S. Cl. 29—157.3 D **7 Claims**



1. A method of manufacturing a cross-flow heat exchanger formed of at least one set of first, second, and third adjacent heat exchange plates having end portions, a first corrugated plate having side edges and end portions and having between said side edges thereof, lengthwise corrugations from end to end of said plate, this corrugated plate being between and defining with said first and second heat exchange plates first fluid flow paths along corrugations thereof, a second corrugated plate similar to the first corrugated plate and situated between and defining with said second and third heat ex-

change plates, second fluid flow paths similar to and transverse of the direction of said first fluid flow paths, said heat exchange and corrugated plates all comprising adjacent I-shape surfaces of substantially the same size and orientation, and an end plate outward of each of the two opposite outermost surfaces of said heat exchange plates, the method comprising the steps: coating said plates with a fusible coating, bending each of the end portions of each corrugated plate over on itself to form a double thickness sealing edge, positioning said plates in a stack with the I-shaped surfaces adjacent, adhering said plates together by compressing said plates together and thermally treating same, and thereby fusing coatings of said adjacent plates and machining said assembled plates to a cylindrical shape whose axis is parallel to the axes of the I's of said plates.

3,967,355

COMPOSITE SINGLE CRYSTAL ARTICLE

Anthony F. Giamei, Middletown, and Bernard H. Kear, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1974, Ser. No. 536,043
Int. Cl.² B23K *28/00*
U.S. Cl. 29—194 **6 Claims**

1. A composite metallic crystalline article having good mechanical properties at elevated temperatures, consisting of at least two adjacent single crystal components bonded by a bond which is essentially identical in chemical composition to at least one of the single crystal components, said adjacent components having the following relationships:

a. having identical crystal lattice structures in the plane of the at least one bond,

b. having substantially identical lattice parameters,

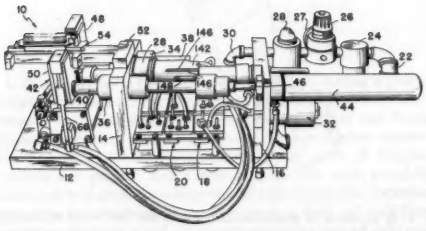
c. having substantially identical crystallograhic orientations, whereby the article, is characterized by the absence of mobile high angle grain boundaries in the region of the at least one bond.

3,967,356

INSERTION TOOL OPERABLE IN ACCORDANCE WITH A PREDETERMINED PROGRAM TO INSERT A PLURALITY OF CONDUCTORS IN INSULATION-PIERCING CONTACTS DISPOSED ON OPPOSITE SIDES OF AN ELECTRICAL CONNECTOR

Harley Raymond Holt, Hillside, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 407,781, Oct. 19, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,830
Int. Cl.² H01R *43/04*
U.S. Cl. 29—203 MW **40 Claims**



1. Apparatus for terminating a plurality of free-ended insulated conductors in respective insulation-piercing contact portions arranged in separate rows on each side of an electrical connector, said apparatus comprising:

connector support means for supporting the connector with the contact portions oriented to receive respective conductors disposed immediately adjacent and parallel thereto;

a plurality of insertion levers each including an upper and a lower end and each pivotally mounted in alignment with each other on opposite sides of said connector support means;

a pair of conductor insertion tools each mounted at said upper end of a respective insertion lever and each including at least one insertion blade for engaging and pressing a conductor into an insulation-piercing contact portion;

a circuit including a device having extensible means connected to said lower ends of said insertion levers, first switch means operable to cause said extensible means of said device to pivot the upper ends of said insertion levers toward each other to effect conductor insertion, and second switch means operated by one of said levers upon completion of insertion to reverse said device and withdraw said extensible means; and

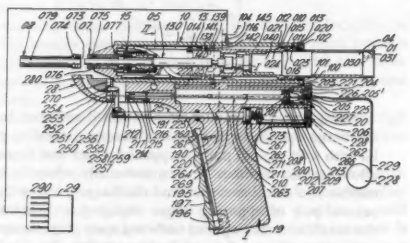
insertion lever carriage means mounted for movement relative said connector support means between points spaced a distance of at least the spacing between the parallel content portions of a row.

3,967,357

WIRE SKINNING AND WRAPPING TOOL

Frans Pharailda Jozef Boissens, Heide Kalmthout, and Guy Charles Joseph Leon Gilbert Ghislain Marie Franck, Borsbeek, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 3, 1975, Ser. No. 610,020
Int. Cl.² H01R *43/04*
U.S. Cl. 29—203 D **17 Claims**



1. A wire skinning and wrapping tool for carrying out successive first and second wire skinning and wrapping operations, said tool including rotatable skinning and wrapping means to skin a portion of an insulated wire and to wrap the so obtained skinned portion and second means to bring said portion to be skinned and wrapped and said skinning and wrapping means in proximity of each other prior to each of said first and second skinning operations so that said portion may then be skinned, characterized in that after each wrapping operation said second means are able to rotate said skinning and wrapping means (05, 07) so as to bring them in proximity of said portion to be skinned and wrapped.

3,967,358

CONTROL SYSTEM FOR BATTERY PLATE STACKING APPARATUS

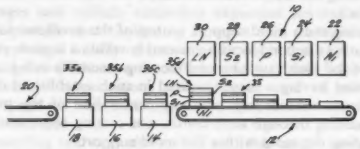
Daniel Orlando, New Berlin, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 11, 1975, Ser. No. 603,398
Int. Cl.² H01M *10/14*
U.S. Cl. 29—204 R **19 Claims**

1. An electrical control system for controlling a battery plate stacking apparatus which includes a plurality of battery plate and separator dispensers for continuously forming books of battery plates and separators, a station for accumulating at least one book to form a battery element, and a shuttle device

for transferring the battery element for further processing, the control system comprising:

first counter means for determining the number of cycles of operation of the stacking apparatus and means responsive to said first counter means for controlling the disposition of the last plate or separator of the battery element, and

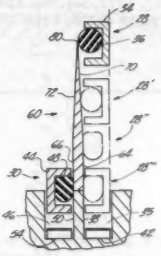


second counter means for determining the number of books accumulated at said station and means responsive to said second counter means for actuating the shuttle device after a preselected number of books sufficient to form a battery element have been accumulated.

3,967,359
LOADING DEVICE FOR INSTALLATION OF ROTARY ENGINE OIL SEALING RINGS

Lewis M. Davis, Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Oct. 23, 1974, Ser. No. 517,087
Int. Cl.² B23P 19/02
U.S. Cl. 29—235 7 Claims

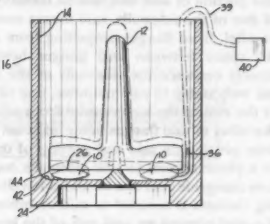


1. The combination comprising a body having a first radially inwardly facing cylindrical wall surface having a first wall diameter, a second radially outwardly facing cylindrical wall surface having a second wall diameter which is greater than said first wall diameter and an end face surface which intersects said first and second wall surfaces, said first and second wall surfaces having parallel axes, a first annular resilient seal having a radially outwardly facing sealing edge with a first relaxed diameter and adapted for sealing engagement with said first wall surface, a second annular resilient seal having a radially inwardly facing sealing edge with a second relaxed diameter and adapted for sealing engagement with said second wall surface, and a loading device comprising an annular sleeve including means providing a first surface adapted to rest upon said end face surface and means defining first and second frustoconical surfaces coaxial with said wall surfaces respectively and converging axially outwardly of said first surface, said first conical surface having a minimum diameter equal to said first wall diameter and a maximum diameter at least equal to said first relaxed diameter, said second conical surface having a maximum diameter equal to said second wall diameter and a minimum diameter equal to or less than said second relaxed diameter.

3,967,360
PNEUMATIC JACK DEVICE

Ted W. Nolte, Safford, Ariz., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part inerest

Filed July 1, 1975, Ser. No. 592,279
Int. Cl.² B25B 27/14
U.S. Cl. 29—252 1 Claim



1. A pneumatic jack device, which comprises:

a. an agitator having a bottom annular shoulder of a tub of a washing machine;

b. an annular split member having a pair of closed ends, distendable surfaces, an opening through one said surface, and a hollow chamber therein, said member inflatable into a split toroidial shaped configuration, said inflated member frictionally engaging a bottom surface of said annular shoulder of said agitator;

c. an eyelet affixed to one said end of said annular split member;

d. a hook element hingably joined to said other end of said annular split member, said hook element engaging said eyelet to hold said annular split member in said torodial configuration under said annular shoulder of said agitator;

e. a valve member having a stem extending inwardly into said opening of said annular split ring member, said stem being externally threaded;

f. an annular collar sealing said valve member to said annular split ring member;

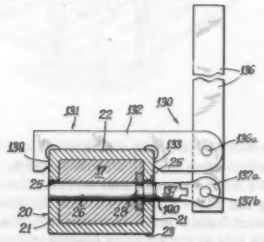
g. a pressurizing source; and

h. a pressurized line threadably engaging said stem and communicating with said pressurizing source.

3,967,361
PIN REMOVER AND INSTALLER

Russell Dwane Merkel, Coal City, and William Edwin Lanz, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 9, 1975, Ser. No. 584,996
Int. Cl.² B23P 19/04
U.S. Cl. 29—267 2 Claims



1. A tool for removing or installing a retaining pin of an assembly which includes a supporting shank having a through bore, a member which has parallel side walls and transverse

walls defining a socket to receive said shank with aligned holes in said side walls that register with the through bore when the member is properly mounted on the shank, a retaining pin which impales said through bore and aligned holes, and a retainer washer which seats in a cavity of the assembly and engages said pin, said tool comprising, in combination:

a mounting element which includes a web and means for securing said mounting element to the member with an end portion of said web spaced laterally outside the plane of one of the sidewalls, said means consisting of a pair of parallel, fixed flanges projecting from a side of said web, the space between said flanges being such that they closely embrace the sidewalls of the member to secure the web stably to said member, one of said flanges being at the end of the web remote from said end portion, and the other of said flanges being adjacent said end portion;

a lever pivoted on said end portion of the web for rotation in a plane normal to said sidewalls, said lever having an arm alongside said one of said sidewalls when said mounting element is secured to said member;

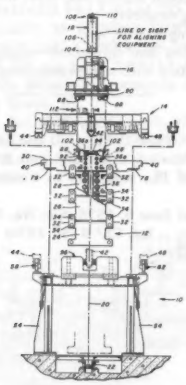
and a stud pivoted on said arm of the lever, said stud being in axial alignment with the retaining pin when the mounting element is secured to the member, said stud having a pin engaging end portion that is smaller in diameter than the holes in the sidewalls, said lever being constructed to provide manually operable force multiplying means by which the stud may be moved effectively axially to slide the retaining pin endwise and selectively engage or disengage the pin and the retainer washer.

3,967,362

CONTINUOUS CASTER ALIGNMENT METHOD

Alfred J. Capriotti, Falls Township, Bucks County, and Louis G. Lazzaretti, Harmony Township, Beaver County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed July 14, 1975, Ser. No. 596,035
Int. Cl.² B23Q *17/00*
U.S. Cl. 29—407 **6 Claims**



1. A method of aligning elements of a continuous-casting apparatus including a mold, a mold support, a mold oscillator table and a discharge rack said method comprising:

spacing the roller elements of the discharge rack a given distance from a given line which is coincident with the center line of the product passing through such continuous-casting apparatus;

leveling the discharge rack about a portion thereof through which such discharge rack is supported within such continuous-casting apparatus;

supporting the discharge rack about the supporting portions thereof;

locating a first locating assembly at the top of the discharge rack, such first locating assembly being configured having a target located in an established dimensional relationship with the center line of the product passing through such continuous-casting apparatus;

locating the mold oscillator table on top of the discharge rack;

placing such mold support on top of the oscillator table;

locating a second locating assembly within a bottom portion of the mold, such second locating assembly being configured having a target located in such established dimensional relationship with the center line of the product passing through such continuous-casting apparatus;

placing the mold within the mold support;

locating an optical instrument within the top of the mold, the optical instrument having a line of sight located in such established dimensional relationship with the center line of the product passing through such continuous-casting apparatus;

sighting through the optical instrument; and

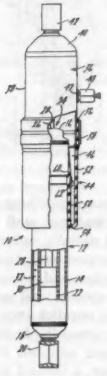
adjusting the positions of the discharge rack, mold oscillator table and mold support relative to one another until all of the targets are aligned with a target located below the discharge rack which is in such established dimensional relationship with the center line of the product as it enters the remainder of such continuous-casting apparatus.

3,967,363

METHOD AND APPARATUS FOR MANUFACTURING COMBINATION SHOCK ABSORBERS AND LEVELING STRUTS

Robert R. Meyer, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Dec. 13, 1973, Ser. No. 424,294
Int. Cl.² B23P *15/00*; F16F *9/04*
U.S. Cl. 29—434 **15 Claims**



1. A method for installing a diaghragm on a combination shock absorber-leveling unit of the type including a shock absorber having a piston and piston rod supported for reciprocal movement in a body member and with a dirt shield connected to the piston rod comprising the steps of:

locating the diaphragm on the body member;

connecting a first end of the diaphragm to the body member;

moving the diaphragm longitudinally to a position wherein the opposite end thereof extends around a plurality of

radially movable deforming fingers arranged concentrically of the shock absorber,

thereafter moving said fingers radially outwardly and thereby radially expanding a portion of said opposite end of said diaphragm so as to define a generally radially extending portion of said diaphragm,

moving said dirt shield and said diaphragm axially of one another so that the adjacent end of said dirt shield engages said radially extending expanded portion of said diaphragm and continuing to move said dirt shield and diaphragm axially of one another such that said end of said dirt shield moves axially interiorly of said fingers and thereby transpositions said opposite end of said diaphragm off from said fingers and onto the end of said dirt shield, and

connecting said opposite end of said diaphragm to the dirt shield.

3,967,364

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

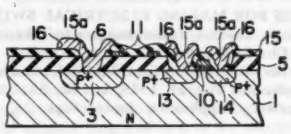
Hiroshi Kawamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Sept. 6, 1974, Ser. No. 503,875

Claims priority, application Japan, Oct. 12, 1973, 48-113931

Int. Cl.² H01L *21/88, 21/441*

U.S. Cl. 29—578 **16 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

a. selectively introducing a first impurity of a first conductivity type into a first surface portion of a semiconductor substrate of a second conductivity type, opposite said first conductivity type, to form a first semiconductor region of said first conductivity type in the surface of said substrate;

b. forming a first layer of insulating material on the surface of said substrate;

c. forming a first hole in said first layer of insulating material to expose a second surface portion of said substrate spaced apart from said first surface portion;

d. introducing a second impurity into said substrate through said first hole to form a second semiconductor region which constitutes a semiconductor circuit element;

e. forming a wiring layer on a part of said layer of insulating material covering said first surface of said first semiconductor region;

f. forming a second hole in said first layer of insulating material to expose a surface portion of said first semiconductor region;

g. forming a second layer of insulating material to cover at least said wiring layer and a portion of said second semiconductor region; and

h. connecting, through said first and second holes, electrodes to said first and second semiconductor regions.

3,967,365

PROCESS FOR THE PRODUCTION OF A TWO-PHASE CHARGE SHIFT ASSEMBLY

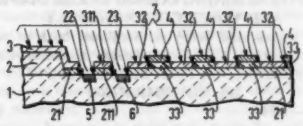
Hans Friedrich, Poering, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 9, 1974, Ser. No. 496,153

Claims priority, application Germany, Aug. 24, 1973, 2342923

Int. Cl.² B01J *17/00*

U.S. Cl. 29—579 **6 Claims**



1. A process for the production of a two-phase charge shift assembly comprising applying an insulating layer to a semiconductor substrate, applying a highly ohmic polycrystalline silicon layer to said insulating layer, forming metal electrodes on said polycrystalline layer, said electrodes being arranged so that they protect the substantially non-conductive polycrystalline zones lying beneath them, said metal electrodes having spaced edges thereon, implanting charge carriers by ion implantation in an oblique direction with respect to said edges and the surface of said substrate into zones of said layer of polycrystalline silicon to thereby form conductive electrodes in the layer of polycrystalline silicon to serve as electrodes between electrically insulating zones of polycrystalline material, some of said edges shading the underlying polycrystalline layer against ion implantation so that no electrical connections exist between the electrodes and the polycrystalline layer at said edges, while ion implantation occurs at others of said edges to thereby provide electrical connections between such other edges and the ion implanted polycrystalline layer.

3,967,366

METHOD OF CONTACTING CONTACT POINTS OF A SEMICONDUCTOR BODY

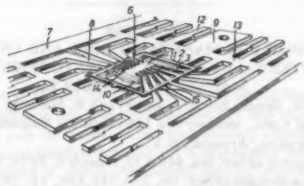
Georg Birglechner, Obereisesheim, and Leonard Botzenhardt, Heilbronn, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 22, 1974, Ser. No. 453,880

Claims priority, application Germany, Mar. 29, 1973, 2315711

Int. Cl.² B01J *17/00*

U.S. Cl. 29—588 **11 Claims**



10. A method for contacting contact points of a semiconductor body comprising the steps of: attaching said semiconductor body to a heat conducting portion of a first frame having inwardly projecting tongues directed towards said contact points on said semiconductor body, positioning a second frame, having a closed outer portion and a plurality of inwardly projecting tongues, with the ends of these said tongues in engagement with said contact points of said semiconductor body and with at least said closed outer portions of said second frame in engagement with said tongues of said first

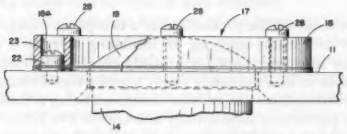
frame, attaching said second frame by its engaging parts to said semiconductor body and to said first frame, cutting said outer portion of said second frame at positions between said tongues of said first frame to separate said tongues of said second frame, and render them extensions of said tongues of said first frame, and separating said first frame to separate said tongues of said first frame to provide insulated lines to said contact points of said semiconductor body.

3,967,367

METHOD FOR ALIGNING LOUDSPEAKER DIAPHRAGM AND VOICE COIL ASSEMBLY

William L. Hayes, and Jerry A. Siciliano, both of Anaheim, Calif., assignors to Altec Corporation, Anaheim, Calif.

Filed Oct. 14, 1975, Ser. No. 621,963
Int. Cl.² H04R *31/00*
U.S. Cl. 29—594 **4 Claims**



1. A method for accurately installing a diaphragm and voice coil assembly in a driver type loudspeaker with the voice coil of the assembly centered in an annular magnetic gap between a pole piece-phasing plug and a top plate of the speaker, comprising the steps of:

placing spacer means in said gap, said spacer means having a thickness dimension equivalent to the desired spacing between the coil and the pole piece-phasing plug,

loosely installing at least a pair of dowel members on retaining means attached to the top plate, said dowel members being free to move radially relative to the top plate,

placing the diaphragm and voice coil assembly over the phasing plug and on the top plate with the voice coil in the magnetic gap and with the spacer means acting to center the coil in the gap, said assembly having a mounting ring with apertures formed therein into which the dowel members are fitted snugly, said dowel members assuming a position on the top plate due to the centering of the voice coil in the gap,

with the diaphragm and voice coil assembly installed in position, locking the dowel members, in their assumed position, to the top plate by means of their associated retaining means, and

fastening said assembly to the top plate.

3,967,368

METHOD FOR MANUFACTURING AND USING AN INTERNALLY BIASED MAGNETORESISTIVE MAGNETIC TRANSDUCER

George W. Brock, Boulder, and Frank B. Shelledy, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 448,132, March 4, 1974, abandoned, which is a division of Ser. No. 296,742, Oct. 11, 1972, Pat. No. 3,813,692. This application Apr. 30, 1975, Ser. No. 572,976
Int. Cl.² G11B *5/42*
U.S. Cl. 29—603 **2 Claims**

1. A method of manufacturing a magnetic read head including the steps of:

depositing a first layer of insulating material on a magnetic supporting substrate;

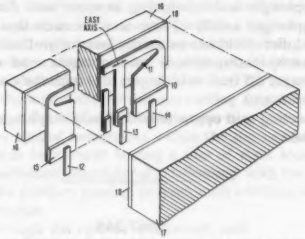
depositing a second layer of relatively conductive constant resistance material in contact with the first layer;

depositing a third layer of variable resistance material exhibiting a magnetoresistive effect directly in contact with the second layer;

applying a highly conductive metal to selected areas of the layers;

applying a mask to portions of the metalized areas;

etching the unmasked areas with an etchant to remove portions of the variable resistance material and highly conductive metal;



depositing a layer of insulating material over the remaining portions of the variable resistance material and highly conductive metal; and

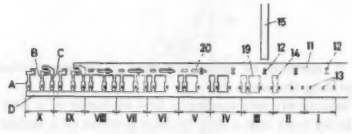
placing a magnetic covering over aforesaid layer wherein said magnetic covering and said magnetic substrate comprise pole pieces in said magnetic read head.

3,967,369

PROCESS FOR MAKING ELECTRICAL SWITCHES

Tetsuo Takano, Toyama, Japan, assignor to Takano Precision Industry Co., Ltd., Japan

Division of Ser. No. 399,681, Sept. 24, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,645
Claims priority, application Japan, Sept. 26, 1972, 47-96402
Int. Cl.² H01H *11/00*
U.S. Cl. 29—622 **5 Claims**



1. A process for the manufacture of an electric switch, characterized by the following steps:

punching I-shaped holes through a sheet conductor,

forming contact pieces substantially conforming to said I-shaped holes by punching from a strip of contact material,

inserting said contact pieces under pressure into said I-shaped holes,

swaging the contact pieces both upwardly and downwardly so as to retain said pieces within said sheet conductor,

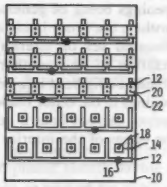
subsequently perforating the I-shaped contact pieces across the middle thereof in conjunction with the adjoining portion of the surrounding sheet conductor so as to remove a predetermined portion of said contact pieces for thereby simultaneously forming two oppositely disposed contacts and a contact gap therebetween, and

simultaneously finishing the opposed faces of the resultant paired contacts by the treatment of shaving so as to impart to said contacts a smooth surface finish and to precisely adjust the size of said gap therebetween.

3,967,370
METHOD OF MANUFACTURING A MULTICONTACT SWITCH

Harry Charles Griffin, Mountain View; Thomas Edwin Holden, Scotts Valley, and Orland Edgar Upton, Campbell, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 3, 1975, Ser. No. 564,948
Int. Cl.² H01H *11/00*
U.S. Cl. 29—622 **23 Claims**

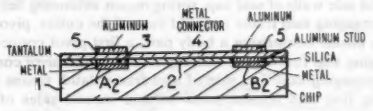


1. A method of making a multicontact switch comprising the steps of:
providing an insulative substrate having a plurality of first and second contact areas thereon;
providing a strip of conductive material;
forming a series of arched portions in the strip of material by passing the strip between a first and a second roller, the first roller having a series of indentations about its circumference and the second roller pressing the strip into the indentations in the first roller to form the arched portions;
aligning each of a predetermined number or arched portions on a selected length of the strip with selected ones of the first and second contact areas on the substrate;
fastening the selected length of strip to the substrate by attaching portions of the strip between each arched portion in the selected length of strip to the second contact areas so that each of the predetermined number of arched portions is arched over a first contact area; and
severing the selected length of strip from the remainder of the strip.

3,967,371
METHODS OF MANUFACTURING MULTILAYER INTERCONNECTIONS FOR INTEGRATED CIRCUITS AND TO INTEGRATED CIRCUITS UTILIZING SAID METHOD

Michel Croset, and Noel Nouailles, both of Paris, France, assignors to Sescosem- Societe Europeenne des Semi-Conducteurs et de Microelectronique, Paris, France

Continuation of Ser. No. 269,871, July 7, 1972, abandoned, which is a continuation of Ser. No. 102,379, Dec. 29, 1970, abandoned. This application Aug. 21, 1973, Ser. No. 390,298
Claims priority, application France, Jan. 6, 1970, 70.00288
Int. Cl.² H01L *21/88*
U.S. Cl. 29—625 **3 Claims**

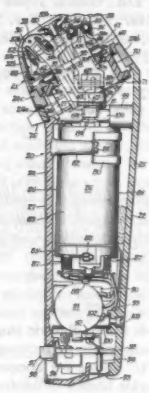


1. Process of manufacturing multilayer interconnection patterns for interconnecting elements integrated over the same substrate comprising the steps of:
a. forming a contact zone for each element;
b. depositing over said substrate a first conductive layer of a first metal, etching according to a predetermined pattern, said first layer interconnecting some of said contact zones;
c. depositing over said conductive layer a second layer of a metal easily oxidizable by a well defined thermal treatment and that upon oxidation forms an oxide having a high resistance to chemical agents and high dielectric properties;
d. depositing protecting studs over said second layer, said studs extending over some of said contact zones and being made of a body resistant to said thermal treatment;
e. treating the whole assembly thermally in an oxidizing atmosphere at elevated temperature, whereby the non-protected zones of said second layer are preferentially oxidized to a non-conductive oxide and thereby forming a third dielectric layer, and the non-protected zones of said second layer are at most only partially oxidized;
f. depositing over said assembly a third conductive layer of said resistive metal as in step (b); and
g. etching said third layer according to a predetermined pattern thereby interconnecting some of said contact zones.

3,967,372
SHAVER WITH ADJUSTABLE LONG HAIR TRIMMER

William P. Beck, Westchester; Francis L. Carr, Downers Grove; Howard R. Chapin, Park Ridge, and Gordon Bast, West Chicago, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Mar. 31, 1972, Ser. No. 239,998
Int. Cl.² B26B *19/10, 19/04*
U.S. Cl. 30—34.1 **17 Claims**



1. An electric shaver having means for cutting long and short facial hair and for trimming moustaches and sideburns comprising a pair of arched perforated shaving combs supported in spaced parallel relation on a supporting frame, a housing enclosing a motor, oscillating driving means connected to said motor and extending outside of said housing, a pair of separated cutting means each driven by said driving means and each engaged with the underside of one of said combs to cut hair therebetween, a T-shaped trimmer having mounting and driving portions extending between said combs and said cutting means toward said housing, said trimmer having support means which guide said trimmer for movement in the direction in which said mounting portion extends to position said trimmer in at least two alternative positions, said trimmer having oppositely facing rows of cutting teeth which overlie the edges of said combs, one of said positions being a position in which said teeth lie in a plane tangent to the curva-

ture of said combs, the other of said positions being a second position in which said trimmer is elevated above said combs to permit trimming of hair independent of the use of said shaving combs, said housing enclosing a rotary cam which is actuable from the exterior of said housing to position said trimmer in either of said positions, cam followers extending from said cam through the wall of said housing into engagement with the mounting portions of said trimmer, a manually operated slide on said housing for actuating said cam, said slide comprising a one piece plastic member having a pair of outwardly extending flexible arms which engage the outside wall of said housing and a connecting portion extending through a slot in said housing into engagement with said cam, combination retaining and detent means in said connecting portion biased into engagement with the interior of said housing by said arms.

3. An electric shaver comprising two spaced short hair shaving heads and a long hair trimmer supported in part on a head frame which is removably mounted on a housing, said housing enclosing a motor which drives the shaving heads and trimmer, said shaving heads include a pair of cutters mounted for reciprocating movement on said housing within said head frame, said shaving heads also including perforated flexible combs mounted on said head frame, guide means on said head frame supporting said trimmer for movement toward and away from said shaving heads, cam means on said housing to control the position of said trimmer, and means on said head frame biasing said movable trimmer into engagement with said cam means.

3,967,373

OUTER BLADE FOR ELECTRIC SHAVER

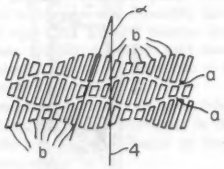
Satoshi Sakai, Hirakata; Norio Shimizu, Neyagawa, and Junji Nomura, Takatsuki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 20, 1974, Ser. No. 453,042

Claims priority, application Japan, Mar. 22, 1973, 48-32859; Mar. 22, 1973, 48-32860

Int. Cl.[2] B26B *19/04*

U.S. Cl. 30—43.92 10 Claims



1. An outer blade for an electric shaver in the form of a flat perforated thin metal plate of rectangular outline capable of being bent into "U" shape for cooperating with a cyclically moving set of interior blades of conforming profile for shearing beard hairs, the outer blade having a frame portion and a field portion, the field portion having generally longitudinally extending ribs extending along axes which are spaced generally parallel to one another, adjacent ribs defining between them respective series of closely spaced openings extending from rib to rib, the ribs being of wavy sinusoidal configuration with adjacent ribs being out of phase with one another so that the length of adjacent openings as measured from rib to rib differs, the length increasing and decreasing on a cyclical basis, and with a substantial difference in length between the longest openings and the shortest openings so that the longest openings are long enough to admit long beard hairs for shearing by the interior blades, adjacent ones of the closely spaced openings being of generally similar shape parallel to one another.

10. In an electric shaver, an outer blade and an inner blade assembly, the outer blade being in the form of a perforated thin metal plate, the outer blade having a frame portion and a field portion, the field portion having generally longitudinally extending ribs extending along axes which are spaced generally parallel to one another, adjacent ribs defining between them respective series of closely spaced openings extending from rib to rib, the ribs being of wavy sinusoidal configuration with adjacent ribs being out of phase with one another so that the length of adjacent openings as measured from rib to rib differs, the length increasing and decreasing on a cyclical basis, and with a substantial difference in length between the longest openings and the shortest openings so that the longest openings are long enough to admit long beard hairs for shearing by the interior blades, adjacent ones of the closely spaced openings being of generally similar shape and parallel to one another, the inner blade assembly being in the form of a reciprocated set of interior blades arranged in spaced parallel relation to one another and of "U"-shaped profile, the outer blade being bent into conforming profile, the closely spaced openings in the outer blade being so angled that the longitudinal edges thereof bear a constant shallow angle with respect to the edges of the interior blades.

3,967,374

SHAVING HEAD FOR A DRY-SHAVING APPARATUS

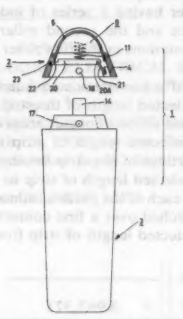
Ebbe Boiten, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,493

Claims priority, application Netherlands, Apr. 25, 1974, 7405554

Int. Cl.[2] B26B *19/04*

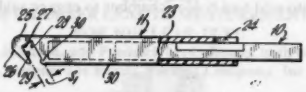
U.S. Cl. 30—43.92 10 Claims



1. In a dry shaving apparatus including a housing, a motor with a drive member in said housing, a shaving head which is detachably mounted on said housing and includes a cap having first and second opposite side walls, a top part and an open bottom part, a shear plate with hair-receiving apertures therein at said top part, a cutter having a base and a plurality of blades for engaging and cooperating with said shear plate for cutting hairs extending through said shear plate apertures, and coupling means on said base for engaging said drive member, the improvement in combination therewith, of a frame for supporting said cutter within said cap, said frame having first and second opposite sides corresponding to said first and second side walls of said cap, spring means extending between and engaging said frame and said base of the cutter, pivotable hinge means comprising a body part, a first pivot connection engaging said first side of said cap and a second pivot connection engaging said first side of said frame, latch means comprising first and second parts on said second sides of said frame and cap respectively, said frame being pivotable between operative position and open position, said frame when in operative position, being disposed within said cap with said spring means compressed and urging said cutter blades against shear plate, said spring also urging said first and second parts of said latch means into releasable locking engagement, and

said frame when in open position, being completely outside the cap.

3,967,375
RAZOR CONSTRUCTION
Edward J. Hoffschmidt, Harpsichord Turnpike, Stamford, Conn. 06903
Continuation of Ser. No. 335,447, Feb. 26, 1973, abandoned.
This application Mar. 3, 1975, Ser. No. 554,548
Int. Cl.² B26B 21/52; B65D 81/00
U.S. Cl. 30—47 10 Claims



9. In combination, an elongated integral single-piece generally prismatic molded-plastic sheath having a hollow generally prismatic interior open to one of the sides of said sheath, the sectional extent of said open side being of at least the sectional extent of the interior to which access is had via said open side; and a razor-blade subassembly comprising blade means and a rigid back permanently united to and supporting said blade means with at least one elongate straight cutting edge positioned and exposed for a shaving cut, said back defining between front and back faces blade-mounting means at and adjacent to a back edge parallel to said cutting edge, one of said faces having a central locking recess offset from said back edge, the overall length, width and thickness dimensions of said subassembly conforming to the length, width and thickness dimensions of the interior of said sheath, whereby the subassembly is removably insertable in said sheath via said open side; at least one of the longitudinal-end sides of said sheath being closed and including a hooked lug formation of width substantially coextensive with the width dimension of said sheath and defining a razor-mounting opening having an inner-wall contour integrally formed with one longitudinal-end side of said sheath and substantially matching the longitudinally central sectional contour of said subassembly at least at the region thereof which includes said back-edge and at adjacent portions of said front and back faces, the outermost end of said lug formation defining with the opposed inner-wall contour a blade-clamping span which is no greater than the lug-overlapped local effective thickness of said blade-mounting means when the back edge of said blade assembly is received in said hooked lug formation, and said sheath having at the lug-formed end thereof a centrally located integral detent formation projecting within said span and positioned for razor-retaining register with said recess when the longitudinally central back-edge region of said razor-blade subassembly is fitted to said contour.

3,967,376
CLEAN UP/CUT SPOON
Donald E. Foley, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Feb. 5, 1974, Ser. No. 440,133
Int. Cl.² A47J 43/28
U.S. Cl. 30—150 1 Claim

1. In an article of cutlery, a feeding implement having means to be selectively used as either one of several different conventional feeding implements, said implement comprising a spoon bowl integral with a handle, a flange integral with one side edge of said bowl, an outer side edge of said flange being straight so that said flange serves as a food scraper, said flange being hollow and containing a second feeding implement slidable inwardly or outwardly of an opening in said flange, wherein a push rod slidable in a longitudinal channel within said handle serves to selectively slide said second feeding implement inwardly or outwardly of said flange, wherein a knob on an end of said push rod projects outward of a slot in said handle for manual control to slide said push rod, wherein said second implement comprises a fork integral with said push rod and which is slidable from a front end of said flange.

3,967,377
PRECISION POSITIONING DEVICE FOR TOOL BLADES AND THE LIKE
Royzell F. Wells, 6936 S. Sycamore St., Littleton, Colo. 80120
Filed Mar. 17, 1975, Ser. No. 558,709
Int. Cl.² B26B 1/08, 5/00
U.S. Cl. 30—320 9 Claims

1. Apparatus for providing precise linear positioning of a member comprising:

housing means having a cylindrical threaded portion thereon,

spindle means having first and second cylindrical threaded sectors in spaced relation thereon with said first threaded sector being arranged for cooperative engagement with said threaded portion of said housing means,

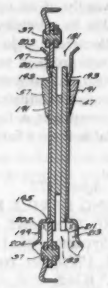
chuck means including means at one end for gripping the member and a cylindrically threaded segment at the other end for cooperatively engaging said second cylindrical threaded sector of said spindle means, the threads of said segment and said second sector being of a smaller pitch but common direction relative to the threads of said housing means and said first sector, and

means retaining said chuck means for permitting axial movement thereof relative to said housing means while preventing rotary motion between said chuck means and said housing means, said retaining means including means extending through and externally accessible from said housing means for releasably engaging said gripping means with the member, whereby application of relatively large rotary motion to said spindle means results in relatively small linear motion of the member gripped by said chuck means.

3,967,378
SAW CHAIN GUIDING ARRANGEMENT
Uwe F. Arff, and Ronald J. Hatton, both of Peterborough, Canada, assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Nov. 25, 1974, Ser. No. 526,704
Int. Cl.² B25B 17/02; B23D 57/02
U.S. Cl. 30—383 16 Claims

1. A chain saw comprising a frame, an engine supported by said frame, a chain sprocket rotatably supported by said frame and driven by said engine, a sprocket guard supported from said frame, a cutter bar having an end supported between said frame and said sprocket guard in spaced relation from said sprocket, a first guide plate supported between said frame and said cutter bar and including a main part, and a guide portion extending from said main part and including a first part extending in generally parallel and laterally outwardly offset relation with respect to said cutter bar and a second part diverging laterally outwardly from said first part, and a second

guide plate supported between said sprocket guard and said cutter bar and including a main part, and a guide portion extending from said second guide plate main part and including a first part extending in generally parallel and laterally



outwardly offset relation with respect to said cutter bar, and a second part diverging laterally outwardly from said first part of said guide portion of said second guide plate, and a chain trained around said sprocket and extending between said guide portions and around said cutter bar.

3,967,379

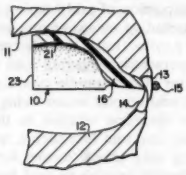
PREFORMED ANTERIOR LABIAL RETAINER

Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093

Filed Dec. 18, 1974, Ser. No. 534,095

Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 B **63 Claims**



1. A preformed orthodontic device adapted to be placed within a patient's mouth and reshaped against the lingual surfaces for holding a wire against the labial surfaces of the patient's anterior teeth, said device comprising:

a forward portion having a front edge positionable adjacent the lingual surfaces of the said anterior teeth,

and a rearward portion extending rearwardly along the lingual surfaces of some posterior teeth including at least the bicuspid teeth, said rearward portion including an essentially plain exterior surface lying adjacent said posterior teeth at least from that side of the gingival edges away from the occlusal edges, across the gingival edges to at least part of the distance towards the occlusal edges thereof.

3,967,380

CLAMPING MECHANISM FOR RECIPROCATING DENTAL TOOL

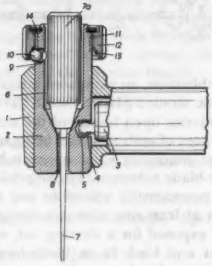
Peter Malata; Josef Buchsteiner, both of Burmoos, and Otto Rosenstatter, Seeham, all of Austria, assignors to Dentalwerk Burmoos Gesellschaft m.b.H., Burmoos, Austria

Filed Aug. 23, 1974, Ser. No. 500,019

Int. Cl.² A61C *1/10*

U.S. Cl. 32—27 **9 Claims**

1. A reciprocating tool holder assembly, particularly suited for mounting a tool useful in the practice of dentistry, said assembly comprising, in combination, a hollow generally cylindrical tool holder defining therein a tool holder chamber adapted to have a tool inserted therein, means engaging said tool holder to produce reciprocating motion thereof, a plurality of bores formed through the walls of said tool holder and opening into said tool holder chamber, a plurality of generally shperically shaped clamping members, loosely fitted one within each of said bores and configured to partially extend to within said tool holder chamber to effect a radial clamping force against the body located within said chamber, said bores being shaped to limit movement of said clamping members radially inwardly of said bores to prevent said clamping members from passing through said bores into said tool holder chamber while enabling said clamping members to extend partially into said tool holder chamber to engage said tool and



apply a radial clamping force thereagainst, a clamping nut adjustably engaged upon said tool holder and having defined thereon conical surface means located to engage said clamping members and adapted to force said clamping members radially inwardly of said bores toward said chamber upon adjustable positioning of said nut relative to said tool holder, and a conically shaped internal abutment surface defined interiorly of said tool holder chamber and adapted to be engaged by a complementary surface of a body placed within said chamber for axially positioning a tool within said chamber, with a tool inserted within said tool holder chamber being axially positioned by said internal abutment surface and have applied thereto a radially directed clamping force by operation of said clamping nut and said clamping members to hold said tool in place during operation of said assembly.

3,967,381

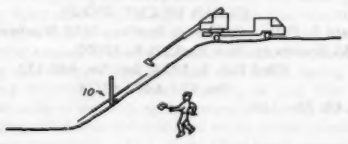
GROUND SLOPE INDICATING INSTRUMENT

Edward N. Chesbro, Stowel Hill Road, Londonderry, Vt. 05148

Filed Jan. 3, 1975, Ser. No. 538,302

Int. Cl.² G01C *15/00*

U.S. Cl. 33—1 H **6 Claims**



1. A ground slope indicating instrument for guiding the construction of an embankment comprising:

a shaft being tapered to a point at one end whereby stable mounting may be realized by pushing said point into the ground;

a spirit bubble level indicator being mounted to said shaft for the purpose of guiding said mounting of said shaft to a predetermined vertical position; and

a plurality of slope indicating rods, said shaft having a plurality of pairs of holes, each said hole adapted to receive and fixedly attach one end of one of said rods, said holes of each of said pairs being coaxial and positioned on opposite sides of said shaft, and said rods attached in said coaxial holes defining a single straight line, said coaxial rods defining an angle in a vertical plane relative to said vertically mounted shaft to indicate a desired grade to earth moving machine operators at a work area remote from said instrument.

3,967,382

PLENUM CHAMBER LENGTH MEASUREMENT SYSTEM FOR NUCLEAR FUEL

Keith O. Johnson, and Fredrick M. Coffman, both of Richland, Wash., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Jan. 10, 1975, Ser. No. 540,152
Int. Cl.² G01B 7/14
U.S. Cl. 33—125 R **12 Claims**

1. A system for use in measuring the length of the plenum chamber of a nuclear fuel rod including a plenum spring having a first end in contact with a fuel column, said system comprising casing means having mounted at one end thereof a transducer means having a displaceable plunger extending into said casing means for contact with said nuclear fuel rod when said rod is disposed in said casing, said transducer providing an output signal proportional to the displacement thereof by an adjacent end of said fuel rod, and coil means mounted within said casing means spaced from said one end a predetermined distance for receiving said fuel rod therein and adapted to produce an output signal when said first end of said plenum spring is centrally located in said coil.

3,967,383

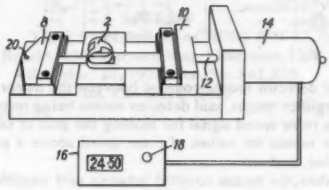
CIRCUMFERENCE GAUGE AND RECORDING METHOD

Terrence Collins, Whitburn, England, assignor to American Filtrona Corporation, Richmond, Va.

Filed Apr. 17, 1975, Ser. No. 568,854
Claims priority, application United Kingdom, Apr. 17, 1974, 16838/74
Int. Cl.² G01B 3/10, 3/02
U.S. Cl. 33—179 **25 Claims**

17. A measuring tape comprising an elongated element including an intermediate portion forming means defining a closed loop with its two end portions extending away from the loop in opposite directions, said end portions of said looped element being firmly affixed to respective separate plates, said plates having inwardly directed end portions extending arcuately towards one another around a portion of the circumference of said loop.

22. A measuring gauge comprising, in combination, a tape including an intermediate portion forming means defining a closed loop with its two end portions extending away from the loop in opposite directions, two mounting members, one fixed relative to each end portion of said tape and mounted for relative movement towards and away from one another to increase or decrease the loop circumference, and means responsive to the distance apart of two datum points, one fixed relative to each mounting member to indicate the size of said loop, means resiliently biasing said mounting members away from each other to tighten said loop, cam means comprising a generally annular body having an inner peripheral cam surface, cam follower means including at least one cam follower member attached to a movable mounting member and operatively engaging said cam surface, said cam means being rotatable and said cam surface having first portions which, when engaged by said cam follower means, moves said mounting members towards each other against said resilient bias to loosen said loop for acceptance or release of a rod to be measured, and second positions which permit said resilient bias to move said mounting members away from each other to tighten said loop around a rod to be measured, motor means operatively associated with said cam means to rotate said cam



means, and control means for actuating and deactuating said motor means for rotating and stopping rotation of said cam means, said control means including means for actuating said motor means to rotate said cam means to a first position in which said cam follower means engage said first portions of said cam surface and said loop is at its maximum circumference, means to deactuate said motor means in said first position to permit insertion of a rod to be measured into said loop, means to again actuate said motor means after the rod to be measured is inserted into said loop to rotate said cam means to a second position in which said cam follower means is juxtaposed to said second portions of said cam surface to permit said resilient bias to tighten said loop around the rod to be measured, means to deactuate said motor means in said second position to allow measurement, and means to again actuate said motor means to rotate said cam means to a third position in which the loop is loosened, means to deactuate said motor means in said third position to permit removal from said loop of the rod that has been measured, said means for actuating said motor means to rotate said cam means to said first position being activated on removal of the rod that has been measured from said loop.

3,967,384

START-UP CONDITIONING MEANS FOR AN AZIMUTH REFERENCE

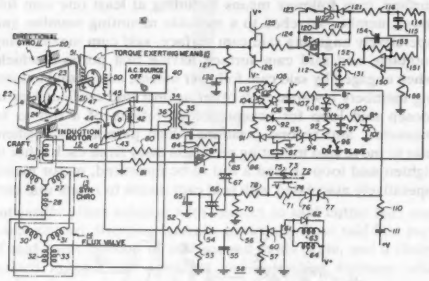
Harold L. Swartz, and Paul E. Tallman, both of Glendale, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,689
Int. Cl.² G01C 19/02
U.S. Cl. 33—324 **15 Claims**

1. In a gyromagnetic compass system including a directional gyroscope normally slaved to magnetic meridian data as detected by a flux valve, a synchro coupled between the gyroscope and the flux valve for producing a slaving error signal, a drive motor for the rotor of the gyroscope including means for providing a signal in accordance with the speed thereof, a torque motor coupled to the gyroscope for controlling the

azimuthal position of the gyroscope, and an improved electronic circuit responsive to the slaving error signal and the rotor speed signal for controlling the torque motor to synchronize the gyroscope with the flux valve data, said improved electronic circuit comprising

amplifier means coupled between the synchro and the torquer for providing a slaving error drive signal to the torquer in accordance with the slaving error signal for valves of gyro rotor speed below a prescribed value,



speed detector means coupled between the motor and said amplifier means, said detector means being responsive to the rotor speed signal for limiting the gain of said amplifier means for values of rotor speed above a prescribed value, and

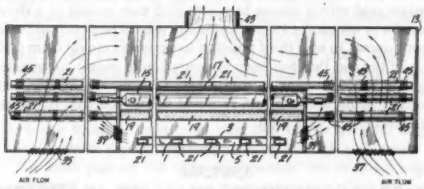
null detector means coupled between said amplifier means and said speed detector means, and responsive to said slave error drive signal for inhibiting said speed detector means from limiting the gain of said amplifier means until said slave error drive signal is below a prescribed value thereby indicating that the gyro is substantially synchronized with the flux valve.

3,967,385

UTILIZATION OF HEAT PIPES FOR COOLING RADIATION CURING SYSTEMS

Donald L. Culbertson, Mountain Lakes, N.J., assignor to National-Standard Company, Wagner-Litho Machinery Division, Secaucus, N.J.

Filed Aug. 26, 1974, Ser. No. 500,576
Int. Cl.² F26B 3/34
U.S. Cl. 34—4 **6 Claims**



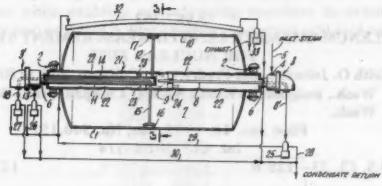
1. In an apparatus for curing radiant energy curable material which apparatus includes moving work to which said radiant energy-curable material is applied, a supporting-conveying means for said moving work, radiant energy means in spaced position relative to said moving work, said radiant energy means comprising an ultraviolet producing source and a reflector partially encasing said ultraviolet producing source and adapted to reflect radiant energy from said ultraviolet producing source toward said moving work, shutter means operable to a closed position relative to said radiant energy means for blocking the radiant energy from said ultraviolet producing source from impinging upon said moving work; the improvement which comprises providing in said apparatus a plurality of spaced heat pipes affixed to said reflector and said shutter means for cooling said elements.

3,967,386

MULTIPLE ROTARY SYPHON FOR CONDENSATE REMOVAL FROM A STEAM-HEATED ROTARY CYLINDER

Abraham C. Miselem Asfura, Pachuca No. 87-102, Mexico City, Mexico

Continuation-in-part of Ser. No. 396,158, Sept. 11, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 504,994
Int. Cl.² F26B 11/02
U.S. Cl. 34—124 **15 Claims**



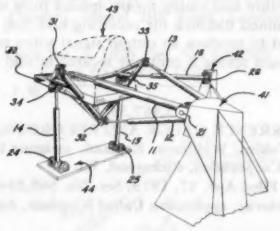
1. In combination, a rotary drum having cylindrically bored main bearings at opposite longitudinal ends, a separate tube through the bore at each bearing and in spaced relation to such bore, whereby two independent passages exist between inside and outside of said drum via each bearing, separate rotary-joint connections to said passages at each end whereby independent stationary conduit connections may be made to each of the four independent passages involved, three separate angularly spaced syphon devices within said drum and secured for rotation therewith, each syphon device being independently connected to a different one of three of the four independent passages, said syphon devices having independent condensate-pickup relation with the inner surface of said drum and at locations spaced angularly with respect to the drum axis, and an external steam-supply connection to the fourth of said passages, whereby independent stationary condensate separators may be connected to the respective syphon devices to enable a continuous flow of steam for succeeding-stage utilization.

3,967,387

MOTION SIMULATOR

Daniel Marchegiani, 804 Bedford St., Fremont, Calif. 94538

Filed Oct. 21, 1974, Ser. No. 516,260
Int. Cl.² G09B 9/08
U.S. Cl. 35—12 P **8 Claims**



1. A motion simulator capable of imparting motion to a payload in at least three degrees of freedom, comprising in combination:

a. a movable platform capable of supporting such a payload and in combination with said payload providing a center of mass, upon which can be defined an orthogonal X, Y and Z coordinate axis system, corresponding to a longitudinal lateral and vertical reference axis respectively;

b. three substantially separated points of support on said platform defining the corners of a triangular base, said base when oriented in a substantially vertical plane, the

perpendicular to said plane lies substantially parallel to the longitudinal axis defined at the center of mass of said movable platform and payload combination;

c. a first fixed support base in a second plane spaced substantially aft of said movable platform;

d. three generally coincident points of support on said fixed support base in proximity to each other and the longitudinal axis extended from the center of mass on said movable platform; and

e. a first means for imparting substantially pure longitudinal forces and displacements to the center of mass of said combined movable platform and payload, and imparting substantially pure rotational moments and displacements in the pitch and yaw degrees of motion about said center of mass, said means comprising three extensible and retractable actuators each having one of its ends connected to a respective one of the generally coincident points on said fixed support base and its opposite end connected to a respective one of the separated points of support on said movable platform, to thereby generally form a tetrahedral arrangement of actuators having its base defined by the triangular base in said first plane on said movable platform and its apex defined by the three generally coincident points of support on said first fixed support base.

3,967,388

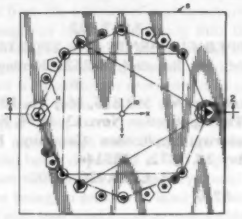
MECHANICAL SYSTEM FOR VISUALLY DETERMINING PERMITTED ELECTRON DISTRIBUTIONS WITHIN MOLECULES

John C. Verkade, and Klaus Ruedenberg, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 470,536, May 16, 1974, abandoned. This application Sept. 25, 1975, Ser. No. 616,604

Int. Cl.² G09B *23/26*

U.S. Cl. 35—18 R **10 Claims**



1. An apparatus system for determining mechanically those combinations of AO's that are permitted for MO formation in a given molecule, comprising:

a. horizontally-extending base means providing on the upper surface thereof a central position and a plurality of peripheral positions arranged generally in a ring around said central position, said peripheral positions including sets of positions representing the corners of plane geometric figures including at least a straight line, an equilateral triangle, and a square;

b. pin means supportable at said central position to extend vertically upward therefrom for defining a generator axis;

c. a plurality of movable pin means selectively positionable on said base means at selected ones of said peripheral positions comprising the corners of one of said geometric figures corresponding to the general shape of the molecule for which the MO's are to be determined and extending upwardly from said base means around said central pin means;

d. means for temporarily mounting said movable pin means at said selected positions;

e. a plurality of atomic orbital models (AO's) capable of representing *s* and *p* types of AO's, said AO models comprising bodies removably mountable on said peripheral pins at selected heights and orientations thereon; and

f. a plurality of generator models including models capable of representing said *s* and *p* types of AO's, said generator models comprising bodies removably mountable on said central pin means at selected heights and orientations thereon; said *s* type bodies for use on both said central and peripheral pin means being of generally spherical shape and including ones with one kind of matchable indicia and others with a different kind of matchable indicia, said *p* type bodies being symmetrical and having two axially-aligned lobes, one lobe of each *p* type body being provided with said first kind of matchable indicia and the other lobe with said other kind of matchable indicia, whereby sequented substitutions of the different AO bodies on said central pin means matching and mismatching alignments thereof with said AO bodies on said peripheral pin means will select those permitted arrangements of the AO's which form the MO's for a wide variety of molecules.

3,967,389

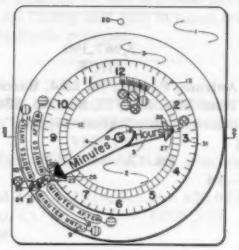
TIME TELLING TEACHING AID

Barry R. Brooks, 3945 Harvard Way, Livermore, Calif. 94550

Filed Mar. 24, 1975, Ser. No. 561,238

Int. Cl.² G09B *19/12*

U.S. Cl. 35—39 **5 Claims**



1. A time telling teaching aid comprising of,

a. a clockface with standard concentric clock indicia of minute segments and hour numerals with the addition of a concentric color and script coded minute ring made up of sixty equal segments, where five consecutive segments complete a sequence of different colors and script between any two hour numerals,

b. a base with minute numerals applied clockwise 1 to 59 at 6 ° intervals, minute numerals applied counterclockwise 1 to 30 at 6° intervals, a base color and script coded minute ring between said clockwise and counterclockwise minute numerals made up of five equal segments of the same five different sequenced colors and script as found within the forementioned clockface color and script coded minute ring between any two hour numerals, with said base indicia concentric about a pivot hole at a radius greater than that of the peripheral edge of the clockface and with the word "O'CLOCK" applied vertical to, and in the same vertical axes of, said pivot hole at the same radius as the forementioned base indicia,

c. a rotatable peripheral ring that covers the indicia of paragraph (b) which has an oblong selector window where said window exposes the forementioned clockwise and counterclockwise minute indicia, the base color and script coded minute ring, and the word "O'CLOCK" at top center at one minute intervals, and where said window has two labels of the same color on each side of the selector window at the same radius as the base clockwise

minute numbers with each label having the words "MINUTES AFTER" applied to it and two labels of the same color, but different from the color of the forementioned labels, on each side of the selector window at the same radius as the counterclockwise numbers with each label having the words "MINUTES UNTIL" applied to it, and of the four said labels, the two labels to the right of the selector window, viewing them from the pivot hole towards the periphery, are right-side-up whereas the two labels to the left of the selector window, with the same forementioned orientation, are upside-down,

d. a circular spacer of a lesser diameter than the clockface between the clockface and base to allow the securing of said clockface to said base and the free movement of the rotatable peripheral ring around said circular spacer between said clockface and base,

e. a minute hand with the word "MINUTES" applied to it with an equilateral triangle forming the point, and

f. an hour hand with the word "HOURS" applied to it with an equilateral triangle forming the point such that the tip of said point lies within the clockface color and script coded minute ring, with said triangle made up of two equal sized colored triangles each of a different color such that the color of the triangle adjacent to any previous hour numeral is the same as that of the "MINUTE AFTER" label of paragraph (c) and the color of the triangle adjacent to any succeeding hour numeral is the same as that of the "MINUTE UNTIL" label of paragraph (c), and with said hour hand manipulated separately from the minute hand about the forementioned pivot hole.

3,967,390

SHOE

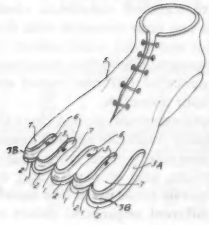
Luis Sentis Anfruns, Panama St. 2&4, Barcelona, Spain

Filed Mar. 6, 1975, Ser. No. 556,122

Claims priority, application Spain, May 8, 1974, 202,922[U]

Int. Cl.[2] A43B *17/00*

U.S. Cl. 36—94 **5 Claims**



1. A shoe comprising; a relatively rigid sole; a relatively flexible upper generally marginally secured to said sole; both said sole and said upper having tip portions defining five toe compartments separate from one another; and flexible wall means interconnecting the tip portions of the relatively flexible upper with the tip portions of the relatively rigid sole, comprising flexible side walls of each toe compartment, and four flexible walls, one between every two of the toe compartments, to enable the separate toe compartments to flex independently of one another and of the remainder of the sole and upper.

3,967,391

SKIING BOOT

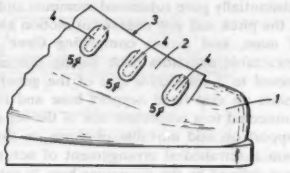
Hermann Kastinger, Hauptstrasse 27, Seewalchen am Attersee, Austria

Filed Mar. 6, 1975, Ser. No. 556,176

Claims priority, application Austria, Feb. 3, 1975, 789/75

Int. Cl.[2] A43B *11/00;* **A43C** *11/00*

U.S. Cl. 36—50 **31 Claims**



1. A skiing boot which comprises an upper of flexible material, said upper defining a slot, at least one fastener for closing said slot of the upper, said fastener comprising a loop, a tightener which is engageable with said loop, and a tightener base part connected to said tightener, and at least one tightener holder which is integrally formed with said upper on the outside thereof and conforms to said tightener base part, said tightener base part being detachable fitted to said tightener holder on the outside of said upper and adapted to be pulled from said tightener holder away from said slot when said upper is open.

3,967,392

GRIPPER ELEMENTS FOR SPORTS SHOES

Adolf Dassler, Am Bahnhof, D-8522 Herzogenaurach, Germany

Division of Ser. No. 360,815, May 16, 1973, Pat. No. 3,859,739. This application Nov. 13, 1974, Ser. No. 523,317

Claims priority, application Germany, May 24, 1972, 2225143; May 24, 1972, 2225144

Int. Cl.[2] A43C *15/00*

U.S. Cl. 36—67 B **2 Claims**

1. A gripper element for a sports shoe for use on plastics tracks, said gripper element comprising a substantially circular plate-like body having first and second faces, an upstanding peripheral portion at said body on one of said faces thereof, said peripheral portion having a rim provided with a plurality of radially extending sharp edges and a plurality of notches respectively extending between said edges.

3,967,393

UNDERWATER SOLIDS COLLECTING APPARATUS

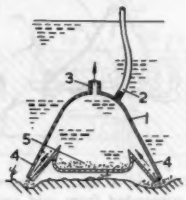
Ralph Alan Nixon, Hamilton, Scotland, assignor to The Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 21, 1974, Ser. No. 453,638

Claims priority, application United Kingdom, July 4, 1973, 31935/73

Int. Cl.² E02F *3/88*

U.S. Cl. 37—58 **3 Claims**



1. Underwater solids collecting apparatus for harvesting in bulk bed material from the bed of a volume of liquid comprising a substantially hollow structure submersible in said volume of liquid and having a closed solid bottom portion forming a hopper-like collecting area in which bed material may be collected, at least two intake passageways located in the lower regions of said structure with at least one on each side of said closed bottom portion, an extraction passageway communicating directly with and continuously open to the upper portion of said structure; said apparatus also including an air inlet passageway connected to the upper portion of said structure adjacent but laterally offset from the extraction passageway through which air under pressure is fed into the interior of said structure continuously during use of the apparatus, said air being extracted from the interior of said structure through said extraction passageway thereby inducing into the interior of said structure through said intake passageways liquid from the lower strata of said volume of liquid, said liquid being induced into said interior with sufficient momentum to carry into said interior solid material from the bed of said volume of liquid, said induced liquid being extracted from said hollow structure along with said air through said extraction passageway and said solid material being deposited in said hopper-like collecting area between said intake passageways, said substantially hollow structure being, in section at least, in the general form of a diving bell with said intake passageways extending downwardly from the lower region of said bell like peripheral legs, each leg having an inlet opening at its lower end positioned below the closed bottom portion of said structure and communicating with an upwardly extending passageway having an outlet opening at its upper end in communication with the interior of said bell above said hopper-like collecting area.

3,967,394

AUTOMATIC GRAB CRANE

Charles S. Kelley, 253 Bradwell Rd., Barrington, Ill. 60010, and James A. Westlund, 1685 Portage Pass, Deerfield, Ill. 60015

Filed Sept. 23, 1974, Ser. No. 508,274

Int. Cl.² B66C *3/00*; E02F *3/88*; B65G *47/00*

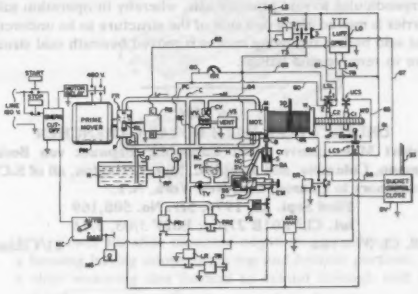
U.S. Cl. 37—71 **16 Claims**

1. In a grab crane having a power driven hydraulic positive displacement pump and a hoist means driven by a hydraulic positive displacement motor for raising and lowering the crane grab,

conduit means including parallel high pressure conduit and low pressure conduit interconnecting said pump and motor in series flow relationship,

switch means controlled by said hoist means and activated when said grab is submerged in water,

means for detecting grab contact with submerged work material including hydraulic pressure responsive means activated by said switch means and connected to and critically responsive to a change of hydraulic pressure in said high pressure conduit from that pressure that is induced therein by the effective weight of the grab being



lowered empty under gravity through the water at a controlled rate,

means actuated by said activated hydraulic pressure means for changing the pattern of hydraulic flow in the conduits between the motor and pump, and

control means actuated by said activated pressure responsive means for closing said grab in timed relation to said change in hydraulic pressure.

3,967,395

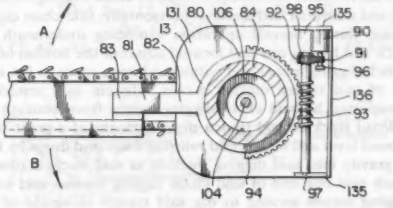
CROSSING UNDERCUTTER AND SWITCH UNDERCUTTER MOUNTED ON TRACTOR-TYPE VEHICLE

John Kenneth Stewart, Columbia, S.C., assignor to Canron, Inc.

Filed Apr. 4, 1974, Ser. No. 458,021

Int. Cl.² E01B *27/04*; E02F *3/08*

U.S. Cl. 37—104 **2 Claims**



1. An undercutting apparatus for removing ballast and other material from beneath solid structures comprising a carrier capable of moving over ordinary ground, a first frame member pivotable about a vertical axis, ballast removing means for removing said ballast from beneath said solid structures, said removing means including an elongated plate member and a chain member mounted to slide about at least a substantial portion of the periphery of said plate member, said ballast removing means being supported by said first frame member, means for driving said ballast removing means, a second frame means on which said first frame member is mounted to pivot about said vertical axis with respect to said second frame means, pivot means for pivoting said first frame member about said vertical axis and thereby pivoting said ballast removing means, a travelling frame member and a track frame member on which said travelling frame member is mounted, means for

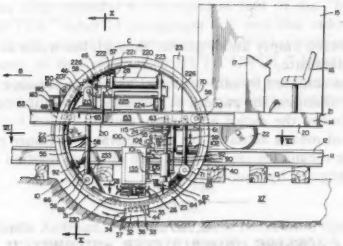
moving said travelling frame member vertically with respect to said track frame member, said second frame means being pivotable about a primary axis, which is generally horizontal when said track frame member is in an upright position, and pivotally connected to said travelling frame member, said track frame member being pivotally connected to said carrier, means for pivoting said second frame means about said horizontal axis, means for pivoting said track frame member on said carrier about a second generally horizontal axis which is perpendicular to said primary axis, whereby in operation said carrier is moved along one side of the structure to be undercut and said ballast removing means is moved beneath said structure to remove said ballast.

3,967,396

UNDERCUTTER WITH ROTARY TRENCHER

Hubert Maisonneuve, West Columbia; Helmuth von Beckmann, Columbia, and Joseph C. Sun, Lexington, all of S.C., assignors to Canron, Inc., New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 508,169
Int. Cl.² E01B 27/04; E02F 5/08, 5/18
U.S. Cl. 37—104 21 Claims



1. An apparatus for removing material from beneath railroad track comprising a rotary trench digging means having digging buckets arranged to circulate about an open space in the interior of said trench digging means, so as to dig a trench beside said track when in their lowest position and discharge to a receiving means when they are near their highest position, and horizontally extending, elongated chain digging means to dig and transport said material horizontally, said chain digging means during normal operation extending underneath said track and having one end located adjacent the bottom of said trench digging means and within said open space in the interior of said trench digging means, wherein said material is transported by said chain digging means from beneath said railroad track to said trench digging means at a point below ground level and beside said railroad track and drops by force of gravity into said digging buckets as said buckets pass beneath said one end of said chain digging means, said trench digging means serving to dig said trench alongside of said track while at the same time transporting the material delivered by said chain digging means to said receiving means, said receiving means being above the ground level.

3,967,397

RAKE ATTACHMENT FOR BACK HOE AND THE LIKE

Harold Nault, 48 Beau St., Norwalk, Conn. 06880

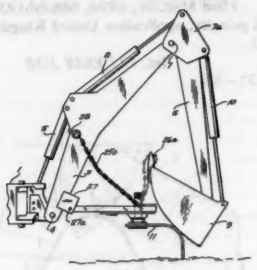
Filed Feb. 6, 1975, Ser. No. 547,384
Int. Cl.² E02F 3/76
U.S. Cl. 37—117.5 4 Claims

1. A rake attachment for a back hoe having a main frame and a swing frame pivotally mounted on said main frame at one of its ends about a horizontal and a vertical axis, comprising in combination,

a longitudinal first member adapted to be pivotally mounted at one of its ends on said swing frame;

a rake assembly operatively mounted on said first member distant from the pivotal connection between said first member and swing frame; and

means connected to the first member adjacent to its other free end and to said swing frame;



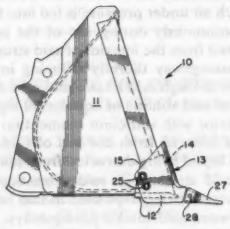
whereby said free end of said first member and said rake assembly is suspended from said swing frame via said connecting means when said rake assembly is lifted by said swing frame.

3,967,398

DETACHABLE CORNER PROTECTOR FOR WORK IMPLEMENTS

Visvaldis A. Stepe, Willow Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 25, 1975, Ser. No. 616,788
Int. Cl.² A01B 35/32
U.S. Cl. 37—141 R 10 Claims



1. A work implement comprising a pair of laterally spaced end walls, a cutting edge extending between said end walls and secured forwardly on said work implement, a corner protector disposed on a forward edge of each of said sidewalls and adjacent to said cutting edge, mounting means slidably mounting said corner protector in interlocking relationship on a forward edge of said sidewall by solely permitting said corner protector to be moved linearly along said forward edge and fastening means releasably attaching said corner protector to said sidewall.

3,967,399

RETAINING MEANS FOR GROUND-ENGAGING TOOL

Lloyd K. Heinold, and Richard E. Livesay, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 5, 1974, Ser. No. 494,405
Int. Cl.² E02F 9/28; B25G 3/26
U.S. Cl. 37—142 A 7 Claims

1. In an earth-working device, the combination comprising:

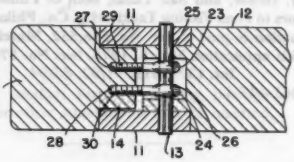
support means including means defining a shank-receiving socket extending along an axis;

a tooth element having a digging portion and a narrower shank extending along an axis away from said digging

portion for being received in said socket for thereby mounting said tooth element on said support means;

a pair of aligned bores formed in said support means transverse to the axis of and intersecting said shank receiving socket;

detachable adjustable means one end secured to and carried by said shank the other end defining a fixed diameter bore extending transverse to the axis of said shank, the axis of said bore being independently selectively adjustable



along said axis of said shank for selected partial misalignment of said axis of said bore with the axis of said bores in said support member; and,

an elongated generally cylindrical radially expandable pin extending through said partially aligned bores for simultaneous engagement with said bore of said adjustable means on said shank and said bores in said socket for biasing said tooth element into engagement with said support means for retaining said shank in said socket.

3,967,400

IDENTIFICATION CARD

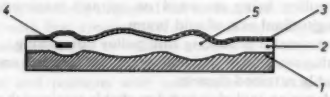
Günther Siegfried Otto, Munich, Germany, assignor to G.A.O. Gesellschaft fur Automation und Organisation m.b.H., Germany

Continuation of Ser. No. 338,043, March 5, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,430

Claims priority, application Austria, Mar. 16, 1972, 22210/72

Int. Cl.² G09F 3/02

U.S. Cl. 40—2.2 **11 Claims**



1. An identification card comprising a laminated structure consisting of an outer base layer, an intermediate layer and an outer cover layer; said base layer comprising a supporting layer of relatively thick transparent foil material providing the necessary durability, rigidity and a portion of the desired thickness of said card; said intermediate layer comprising special paper having zones of respectively different thicknesses distributed therein and discernable by visual and tactile inspection, and containing security and authenticity features; said outer cover layer comprising a covering of transparent material sufficiently thin to conform to the different thicknesses of said intermediate layer, whereby said different thicknesses are accurately reproduced in the outer surface of said cover layer for such visual and tactile inspection.

3,967,401

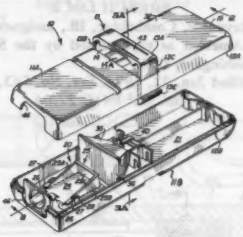
VIEWER WITH MOVABLY MOUNTED SLIDE HOLDER

Jody L. Numbers, 2212 S. Priest, Tempe, Ariz. 85282

Filed May 5, 1975, Ser. No. 574,682

Int. Cl.² G09F 11/30

U.S. Cl. 40—63 A **16 Claims**



1. A viewer for slide mounted negatives comprising:

a housing having cooperating top and bottom portions,

a slide receiving slot formed to extend through said top portion,

a slide holder formed in said bottom portion of said housing comprising a cutaway portion of said bottom portion hingedly mounted at one end thereof to move from a position in surface alignment with the outer periphery of said bottom portion to a position angular with said bottom portion,

said cutaway portion being aligned with said slot so that a slide inserted in said slot engages the other end of said cutaway portion and upon pressure applied thereto pivotally moves said holder to said angular position, thereby aligning the slide in a given optical viewing position in said housing.

3,967,402

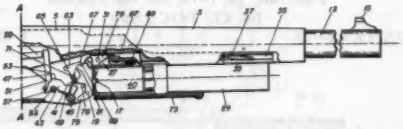
MANUALLY-OPERATED FIREARM WITH FORWARD-MOVING BARREL AND PIVOTED BREECH BLOCK

George E. Cooksey, East Moline, Ill., assignor to The United States of America as represented by the Scretary of the Army, Washington, D.C.

Filed Jan. 22, 1975, Ser. No. 543,100

Int. Cl.² F41C 11/00

U.S. Cl. 42—10 **10 Claims**



1. A breech-loading firearm comprising:

a stationary receiver having a forwardly-facing abutment;

a breech block pivotally mounted near one end on said receiver and having a rearward-facing second abutment engaging said first abutment in firing position;

a barrel slidably mounted near its forward end for forward and rearward movement on said receiver and pivotally connected at its rear end to the other end of said breech block; and

means for firing a cartridge disposed in the rear end of said barrel;

whereby forward movement of said barrel to open the breech at the rear of the barrel bore during firing is prevented by said pivotal connection and the rearward reaction of the expanding gases on said breech block, but said

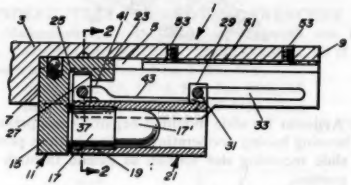
barrel and said other end of said breech block can be moved forwardly after firing to open the breech.

3,967,403

MANUALLY-OPERATED FIREARM WITH FORWARD-MOVING BARREL AND AUTOMATIC BREECH LOCK

George L. Reynolds, Cambridge, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1975, Ser. No. 543,101
Int. Cl.² F41C 27/06
U.S. Cl. 42—10 8 Claims



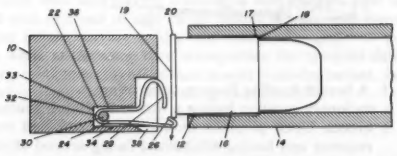
1. A breech-loading firearm comprising:
a stationary receiver having a forward-facing first abutment;
a breech block mounted for forward and rearward movement in said receiver and having a rearward-facing second abutment engaging said first abutment in firing position;
a barrel mounted for forward and rearward movement on said receiver; and
means for locking the breech end of said barrel to said breech block in firing position;
whereby forward movement of said barrel to open the breech at the rear of the barrel bore during firing is prevented by said locking means and the rearward reaction of of the expanding gases on said breech block, but said barrel and breech block can be moved forward after firing to open the breech.

3,967,404

COMBINATION CARTRIDGE EXTRACTOR-EJECTOR

George L. Reynolds, Cambridge, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 15, 1974, Ser. No. 524,286
Int. Cl.² F41C 15/00
U.S. Cl. 42—25 6 Claims



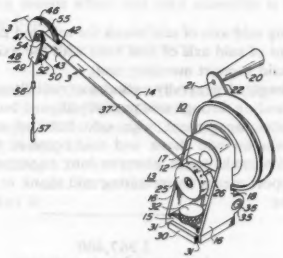
1. A device for extracting and ejecting a cartridge case having a flanged rear rim from a breech of a firearm comprising in combination:
a body movable in axial alignment with the breech and
a hook means and a biasing means mounted in the body and projecting therefrom, wherein the hook means and the biasing means are combined in a unitary structure,
wherein the hook means is adapted to slide over and engage the flanged rim on the rear end of the cartridge case and the biasing means is adapted simultaneously to press against the rear end of the case when the body is moved proximate to the case for engagement therewith, and wherein the biasing means and the hook means cooperate so that when the body is moved away from the breech sufficient to extract the engaged cartridge case therefrom, the biasing means causes the case to pivot on the hook means through a sufficient angle to disengage the rim from the hook means and thereby eject the case from the firearm.

3,967,405

TROLLING APPARATUS

Walter J. Henze, and San Thein, both of Philadelphia, Pa., assignors to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.

Continuation-in-part of Ser. No. 556,552, March 10, 1975.
This application May 5, 1975, Ser. No. 574,382
Int. Cl.² A01K 91/02, 87/04
U.S. Cl. 43—27.4 6 Claims



1. Trolling apparatus for fishing which comprises
a base,
a reel for a supply of line rotatably mounted on said base,
a boom secured at one end to said base and having a hollow tubular free end,
a pulley for said line, and
means for mounting said pulley at said free end for pivotal movement about the longitudinal axis of said boom,
said pulley being mounted on an axis transverse to the longitudinal axis of said boom,
said means for mounting said pulley comprising
a plug inserted in said hollow tubular free end and detachably retained therein,
a sleeve on said plug and detachably retained thereon and rotatable with respect to said hollow tubular end,
said pulley being rotatably mounted on said sleeve, and
a pivotally mounted line guiding bracket carried by said sleeve, and
said guide bracket being mounted on the same pivotal axis as said pulley.

3,967,406

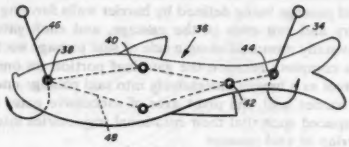
FISH LURE

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla. 74136

Filed Mar. 10, 1975, Ser. No. 556,793
Int. Cl.² A01K 85/00
U.S. Cl. 43—42.24 4 Claims

1. A fish lure comprising:
a molded product of a fish attracting shape; and

and internal flexible wire connecting a plurality of small metal grommets disposed at spaced locations in the



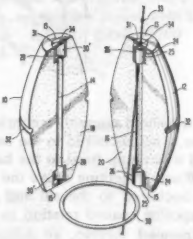
molded product forming opening through which fish hooks or other attachments may be inserted.

3,967,407

FISHING FLOATER

Gerald K. Halbasch, 880 Mandalay Ave., Apartment 729, Clearwater, Fla. 33515

Filed Apr. 30, 1975, Ser. No. 573,082
Int. Cl.² A01K 93/00
U.S. Cl. 43—44.9 3 Claims



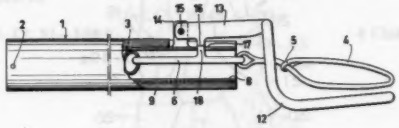
1. A fishing floater comprising a pair of duplicate half-sections having inwardly disposed flat surfaces each of which are provided with first grooves extending substantially the length thereof and arranged to slidably receive a fishing line, said half-sections further including barrel-like exterior walls having truncated end portions with said barrel-like exterior walls arranged to receive an elastic O-ring to retain the inwardly disposed flat surfaces in juxtaposed relation, said first grooves terminating in recesses provided at opposite ends of each said half-section of said floater, each said recess having a greater depth than said first grooves, with each of said respective recesses in one of said half-sections of said floater receiving secondary line guide means having longitudinally slotted curvilinear walls, the said slotted walls each communicate with dimpled areas in supplemental line guide means provided in the end walls, each recess in said other half-section provided with supplemental line guide means, each said supplemental line guide means in said other half-section having a dimpled area, the curvilinear walls of the first said one half-section being received in complementally formed pockets defined by said recesses in said second half-section and said respective dimpled areas arranged to merge into means defining a smooth uninterrupted means defining an opening in the opposite end walls of said assembled floater.

3,967,408

ANIMAL TRAP

Jan Åberg, Pl. 3, Fallbacken, Skelleftea, Sweden (S-931 00)

Filed Apr. 17, 1975, Ser. No. 568,925
Claims priority, application Sweden, Apr. 25, 1974, 7405565
Int. Cl.² A01M 23/34
U.S. Cl. 43—87 11 Claims



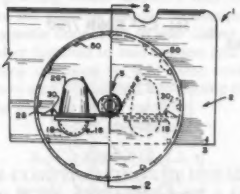
1. A trap for predatory animals to be laid in animal runways comprising a tubular body member, a protective casing of non-metallic material surrounding the major portion of the body member, a spring in said body member and having one end fastened thereto, a snare, a trap setting mechanism connected between the snare and the other end of the spring, said setting mechanism including a catch adapted for insertion into a hole in the body member for engaging the body member with the spring in an extended set position and maintaining the spring tensioned in said set position, and treadle means on which the animal is to tread attached to said body, said treadle means having a release arm for engaging and releasing said catch from engagement with the body member when an animal treads on said treadle means to thereby release the setting mechanism and cause the snare to move inwardly toward the body member.

3,967,409

MOTOR NOISE SIMULATOR FOR WHEELED TOYS

Beverly W. Taylor, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Nov. 24, 1975, Ser. No. 634,648
Int. Cl.² A63H 5/00
U.S. Cl. 46—111 9 Claims

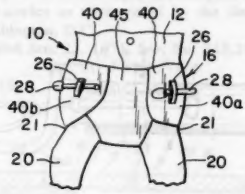


1. In a wheeled toy having a frame member and a wheel mounted for rotation with respect to said frame member closely adjacent said frame member the improvement comprising a boss on said frame member projecting from said member in a direction toward said wheel; two fixed resonators fixedly mounted on said frame symmetrically on either side of said boss, said resonators having a supporting platform; a clopper including a pair of percussion units, a bridging piece between said percussion units, and pawls projecting outboard of each of said percussion units, said percussion units engaging the supporting platforms of said resonators and said bridging piece spanning therebetween and being wedged between said surfaces and a facing surface of said boss, and a multiplicity of spaced trip means carried by said wheel and positioned to engage both of said pawls as said wheel is rotated.

3,967,410
TOY DOLL

Nicholas S. Hodska, Stratford, Conn., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 27, 1975, Ser. No. 553,751
Int. Cl.² A63H 3/24
U.S. Cl. 46—116 11 Claims

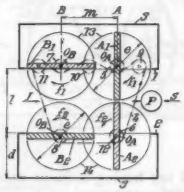


1. A toy doll, comprising:
a. a doll member resembling an infant human and comprising at least one apertured protrusion disposed at the abdominal area thereof and
b. a diaper element comprising a flap portion that comprises a slot therein, said slot being disposed so as to receive said protrusion when said doll member is dressed with said diaper element, whereby a retaining element can be removably disposed at the aperture of said protrusion so as to hold said diaper in position therein said diaper element comprises an elongated central portion and respective said flap portions extending in opposite directions from said first end part, connected at opposite sides of a first end part of said central portion and said central portion comprising a second end part disposed opposite said first end part, said second end part comprising oppositely disposed said slots and each of said flap portions comprising a said slot.

3,967,411
PASSAGES FOR ONE-WAY TRAVERSAL ESPECIALLY FOR PASSENGER TRAFFIC IN STATIONS

Charles Ulmann, Paris, France, assignor to Etablissements Georges Klein, Paris, France

Filed June 14, 1974, Ser. No. 479,523
Claims priority, application France, June 19, 1973, 73.22246
Int. Cl.² E06B 7/00
U.S. Cl. 49—68 9 Claims

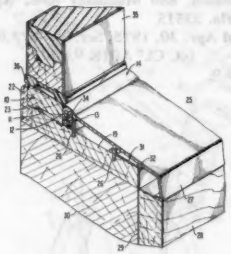


1. In a passage for traversal in one direction, means defining the passage, two successive gates for controlling traversal of said passage, each gate comprising at least one gate leaf, means mounting each gate leaf for rotation in a single direction only such that each gate successively opens and closes said passage during rotation, said rotational movement in a single direction of each gate leaf being such that the portion of the gate leaf in the passage at any time moves arcuately generally in said one direction only, and movement in the opposite is prevented by antireturn means, each gate being mounted such that a traversal path of said passage lies only on one side of the rotational axis of each gate leaf, means conjugating said gates to one another such that initially one is closed and the other open and such that on the opening of either one the other is closed, said successive gates being sufficiently closely spaced to one another as to resist the traversal of said passage by a person in other than said one direction upon opening of the first gate for traversal by a person in said one direction, and hence the simultaneous closing of the other gate, said passage being defined by barrier walls forming sides and entry and exit ends of the passage, and each gate leaf being pivotally mounted along a side of said passage such that during a complete rotation the gate leaf portion on one side of the pivot axis moves successively into said passage and into its side barrier wall, the pivot axes of successive gates being closely spaced such that their rotational trajectories intersect and overlap in said passage.

3,967,412
ADJUSTABLE THRESHOLD

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Sept. 17, 1975, Ser. No. 613,977
Int. Cl.² E06B 1/70
U.S. Cl. 49—468 8 Claims



1. An adjustable threshold assembly comprising in combination a base member, a sill anchored to the base member and overlying it, a rigid water stop fixed to the base member and spaced from the sill and projecting above the base member, a compressible seal anchored to the sill and above the base member and in opposing spaced relation to said water stop and substantially parallel thereto, an adjustable threshold member disposed between the rigid water stop and said seal and substantially coextensive lengthwise therewith and disposed above the base member and adapted to rest thereon when in a full down position, and plural spaced adjusting and leveling screw devices for said adjustable threshold member carried thereby and having screwthreaded engagement within stationary nut means on said base member underlying said adjustable threshold member.

3,967,413
VIBRATORY FINISHING SYSTEMS

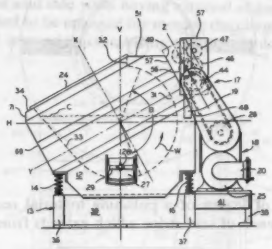
Achille K. Ferrara, Addison, Ill., assignor to Ultramatic Equipment Company, Addison, Ill.

Filed Nov. 15, 1974, Ser. No. 524,257
Int. Cl.² B24B 31/06
U.S. Cl. 51—163.1 12 Claims

1. A vibratory finishing system,
said system including a tub-like container for receiving therein finishing media and pieceparts requiring finishing,
base means,
resilient means for mounting said tub-like container to said base,.
vibratory means mounted to said container to vibrate said container causing said media and pieceparts to move in a orbital counterclockwise direction rising in the back and falling in the front of said container, whereby said

finishing media interacts with said pieceparts to debur and finish said pieceparts,

said tub-like container having an opening normally slanting downwardly from back to front, and



the inner left and right side walls of said container flaring outwardly for inducing a transverse motion to the media in addition to the orbital motion while said container is vibrating.

3,967,414

GRINDING MACHINE WITH A REST APPARATUS

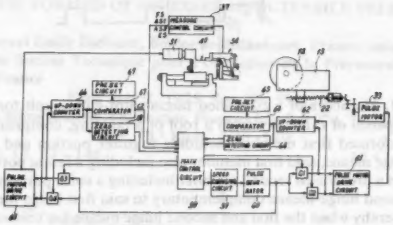
Tsuyoshi Tamesui, Okazaki; Shuichi Nakata, Kariya, and Minoru Enomoto, Handa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Japan

Filed Feb. 7, 1975, Ser. No. 548,020

Claims priority, application Japan, Feb. 12, 1974, 49-17303

Int. Cl.² B24B *49/00*

U.S. Cl. 51—165.77 **8 Claims**



1. A grinding machine comprising:

work support means for rotatably supporting a workpiece,

a wheel support to rotatably support a grinding wheel,

rest means for support said workpiece and for bending the same toward said grinding wheel,

means for advancing said wheel support for a preliminary grinding operation and for stopping the same at a predetermined position while maintaining engagement between said grinding wheel and said workpiece,

means for advancing said rest means for bending said workpiece toward said grinding wheel while said wheel support is stationary and for stopping said rest means after said workpiece has been ground by said grinding wheel with a predetermined stock removal being left,

and means for re-advancing said wheel support after stopping of said rest means for grinding said workpiece until it deviates from engagement with said rest means whereby the same will be positioned at its rotational center.

3,967,415

DEVICE FOR MOUNTING AND DISMOUNTING A GRINDING WHEEL ASSEMBLY ONTO OR FROM, RESPECTIVELY, THE GRINDING SPINDLE OF A GRINDING MACHINE

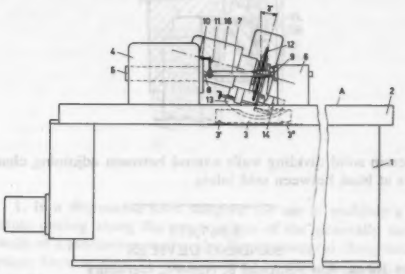
Ernst Seckinger, Zurich; Emil Vogelsanger, Dietlikon, and Robert Wirthlin, Effretikon, all of Switzerland, assignors to Reishauer AG, Switzerland

Filed Sept. 11, 1974, Ser. No. 505,056

Claims priority, application Switzerland, Sept. 17, 1973, 13302/73

Int. Cl.² B24B *41/00*

U.S. Cl. 51—168 **4 Claims**



1. In a grinding machine having a grinding spindle positioned in a grinding support and adapted to have a grinding wheel assembly connected thereto, the combination comprising:

a sliding carriage slidably mounted on said grinding support;

a grinding wheel carrier mounted on said sliding carriage for receiving thereon a grinding wheel assembly;

a threaded spindle threadedly connected to said sliding carriage for slidably moving said sliding carriage and said grinding wheel carrier in a longitudinal direction parallel to the axis of the grinding spindle;

pivotable mounting means supporting said grinding wheel carrier on said sliding carriage for selectively pivoting said grinding wheel carrier about an axis transverse to the grinding spindle between its operating and rest positions;

whereby in the operating position of said grinding wheel carrier a grinding wheel assembly may be moved into position on the grinding spindle by manipulation of said threaded spindle connected to said sliding carriage;

a plate member fastened to said carrier; and

means defining openings in said plate member through which screws may be inserted into mating threaded openings in said grinding wheel assembly.

3,967,416

SYSTEM FOR COMPENSATING THE UNBALANCE OF A ROTATING BODY, ESPECIALLY OF A GRINDING WHEEL

Dieter Birkenstock, Bad Konig, and Otto Jäger, Ueberau, both of Germany, assignors to Gebr. Hofmann KG, Darmstadt, Germany

Filed Aug. 12, 1975, Ser. No. 603,966

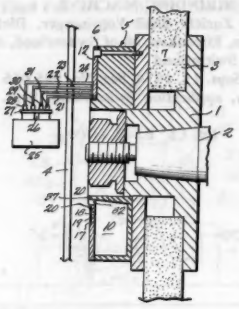
Claims priority, application Germany, Aug. 22, 1974, 7428410[U]

Int. Cl.² B25B *41/04*

U.S. Cl. 51—169 **9 Claims**

1. In an apparatus for compensating for the unbalance of a rotating body including a machine tool with several chambers arranged around the axis of rotation, which rotate together with the rotor and into which, controlled by a control unit, a balancing fluid may be injected, the chambers being disposed in a ring-shaped container at one side of which fluid inlets are provided, arranged on different radii, whereby each inlet on

a certain radius is assigned to a certain chamber and one fluid feed pipe is provided for each radius, the improvement



wherein solid dividing walls extend between adjoining chambers at least between said inlets.

3,967,417

SANDING DEVICES

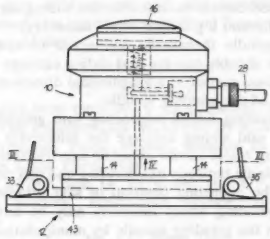
Ivan Jurak, Am Feldrand 8, Niefern, Germany

Filed Mar. 27, 1975, Ser. No. 562,483

Claims priority, application Germany, Mar. 29, 1974, 7411062[U]

Int. Cl.² B24B *23/00*

U.S. Cl. 51—170 TL **7 Claims**



1. An oscillating sanding device comprising a casing, a sanding table, means resiliently connecting the sanding table to the casing, an unbalanced rotor carried by and rotatable with respect to the sanding table, means operatively connecting the rotor to the sanding table in impart to the sanding table vibrations imparted to the rotor by rotation thereof in consequence of such unbalance, and valve controlled fluid pressure means operatively connected to the rotor to produce rotation thereof.

3,967,418

WORK POLISHING TOOL AND METHOD OF MAKING SAME

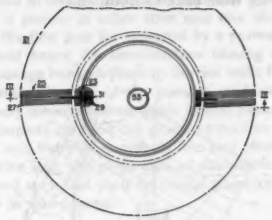
Gus J. Schaffner, III, Pittsburgh, Pa., assignor to Schaffner Manufacturing Company, Inc., Pittsburgh, Pa.

Filed Feb. 20, 1975, Ser. No. 551,377

Int. Cl.² B24D *13/06*

U.S. Cl. 51—334 **18 Claims**

1. A tool for polishing work comprising an annulus of spacers having interposed at intervals therebetween readily radially collapsible strips of a material which is readily deformable to provide said collapsible function in use of the tool, said strips extending radially outwardly from said annulus, said spacers and strips being secured together by an adhesive into a rigid central core from which said strips extend freely, and



a plurality of leaves of a polishing material secured to the portion of each of said strips which extends from said core.

3,967,419

GUTTERING SYSTEMS

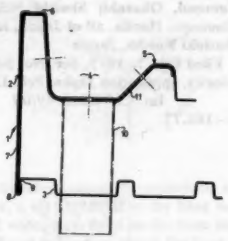
Brian Robinson, Caerphilly, England, assignor to Catnic Components Ltd., Caerphilly, United Kingdom

Filed Dec. 14, 1973, Ser. No. 424,641

Claims priority, application United Kingdom, Dec. 22, 1972, 59377/72

Int. Cl.² E04D *13/04*

U.S. Cl. 52—16 **21 Claims**



1. Members of a combined fascia-soffit-gutter unit for the dispersal of rainwater from a roof of a building, comprising a preformed first member including a gutter portion and first hinge means, said first member also including a fascia portion, and a preformed second member including a soffit portion and second hinge means complementary to said first hinge means, whereby when the first and second hinge means are connected a hinge is formed so that said first member and said second member are connected for relative angular movement with respect to one another and comprise said combined fascia-soffit-gutter unit, and said first member further including a tilting portion integrally connected to the gutter portion at a part thereof remote from said fascia portion, said tilting portion being adapted, when used in connection with a sloping roof, to support a lower end of a tile of the roof in the course of tiles nearest said first member.

3,967,420

PORTABLE WALL SYSTEM AND METHOD OF INSTALLING SAME

William G. Papsco, and Harry Cohn, Jr., both of Portola Valley, Calif., assignors to Papsco, Inc., Sunnyvale, Calif.

Filed Apr. 30, 1974, Ser. No. 465,524

Int. Cl.² E04B *2/74*

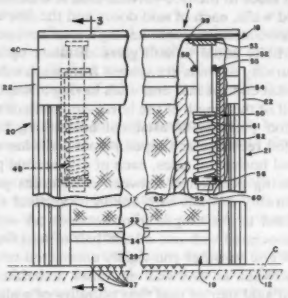
U.S. Cl. 52—127 **12 Claims**

9. A modular wall system comprising a plurality of modules adapted to extend between the floor and the ceiling of a room, each module comprising

a panel having top and side edges and a bottom edge supported on the floor,

a post telescoped over each of said side edges,

a ceiling channel telescoped over the panel top edge and the upper portions of said posts, said channel having a top wall and side walls depending from said top wall, at least one of said side walls having external engagement means adapted to be engaged for moving the channel toward the panel top edge comprising a longitudinally extending



upwardly and outwardly opening groove adjacent the lower edge of the side wall, and

spring assembly means directly interconnecting said ceiling channel and at least one of said side posts and resiliently spacing said channel top wall from said panel top edge, said ceiling channel being movable toward said panel against the force of said spring assembly means whereby to reduce the height of the module for installation and removal of same in a wall system.

3,967,421

TIE FORMED OF STRESSED HIGH-TENSILE STEEL TENDONS

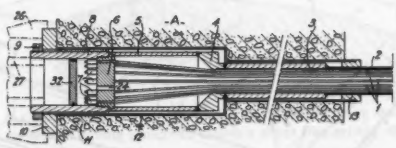
Marcel Emile Dufossez, Boulogne-Billancourt, France, assignor to Societe Technique pour l'Utilisation de la Precontrainte, France

Filed July 2, 1975, Ser. No. 592,527

Claims priority, application France, July 9, 1974, 74.23819

Int. Cl.² E04C *3/10, 5/08*

U.S. Cl. 52—146 **10 Claims**



10. A construction structure comprising a plurality of stays extending each between a couple of points of said structure distant from each other, each of said stay consisting of a tie constituted by a plurality of stressed steel tendons, enclosed in a protective sheath filled with hardened material and including, at its ends, anchoring devices for the transfer of the pull from the tie to the structure, the said sheath forming a conduit whose ends are fixed securely to said anchoring devices, the said conduit being isolated, throughout its length, from said structure so as to be longitudinally slidable with respect to the structure, at least one of said anchoring devices including connection means for the active part of a tensioning apparatus and also including means for bearing against the structure, said bearing means being adjustable on the anchoring device in the longitudinal direction of the tie.

3,967,422

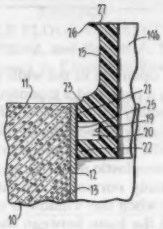
DISPOSABLE MOLD FORM AND METHOD OF MOLDING

William J. Stegmeier, 878 Erickson Road, Concord, Calif. 94520

Filed Sept. 23, 1968, Ser. No. 761,726

Int. Cl.² E04B *1/34;* **E04G** *17/00*

U.S. Cl. 52—169 R **12 Claims**



1. In a disposable form adapted for use in molding a concrete coping along the upper edges of the generally vertical walls of a swimming pool or the like, an integral elongated one piece form section having a surface portion thereof configurated in the finished shape to be imposed thereby upon such coping and being sufficiently stiff to confine a moldable mass of amorphous concrete in such finished shape of the coping, said form section having also an attachment portion provided with attachment surfaces facing in the same general direction as said configurated surface portion and being attachable to such vertical walls of a pool adjacent the upper edges thereof, and said form section including its attachment portion being bendable along the length thereof to enable it to conform to both inside and outside arcuate corners along any such walls of a pool.

3,967,423

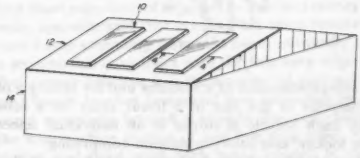
SKYLIGHT SYSTEM

Robert T. Hammond, N. Main St., Plaistow, N.H. 03865

Filed July 28, 1975, Ser. No. 599,695

Int. Cl.² E04B *7/18*

U.S. Cl. 52—200 **8 Claims**



1. A system for maintaining a weather-tight seal between an elongated skylight having a frame of one material and a roof of another material having dissimilar expansion characteristics comprising:

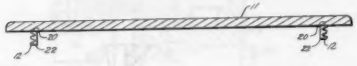
a. a flange mountable along the side edges of said skylight and of a material having an expansion characteristic similar to that of said frame;

b. said flange being formed with an outer lip extending in spaced relation to the outer surface of said skylight; and

c. an elongated flashing mountable along one edge to said roof and of a material having an expansion characteristic similar to that of said roof;

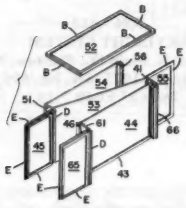
d. said flashing being formed along the opposite edge with a U-shaped channel slidably engaging said flange lip to form a slip joint therewith.

3,967,424
BOAT WINDOW
John I. Gates, 114 Via Mentone, Newport Beach, Calif. 92660
Filed May 2, 1975, Ser. No. 573,808
Int. Cl.² E06B 3/00
U.S. Cl. 52—208 9 Claims



1. A window for openings in the walls of boats, trailers and the like comprising a pane and a mounting member extending effectively continuously circumferentially of the pane a selected distance inwardly of the edge of the pane and mounting the pane therein, the mounting member being fabricated of rigid synthetic thermoplastic material, such mounting member extending substantially normal to the interior surface of the pane, and wherein when the window is mounted in an opening, the surface of the pane between the mounting member and the edge of the pane is mounted against the surface of the wall, and the mounting member extends into the opening and is mounted against the edge of the opening.

3,967,425
MODULAR STORAGE UNITS FOR BICYCLES OR THE LIKE
Richard A. Wolverton, 1620 N. Main St., Walnut Creek, Calif. 94596, and Gordon H. Cooper, 785 T Oak Grove Road, Concord, Calif. 94518
Continuation-in-part of Ser. No. 398,931, Sept. 20, 1973, abandoned, which is a continuation of Ser. No. 170,716, Aug. 11, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,388
Int. Cl.² E04B 1/343
U.S. Cl. 52—237 12 Claims



1. A sub-combination of a modular unit for storing a plurality of bicycles or the like in a linear array on a substrate whereby each bicycle is stored in an individual selectively closable locker, said sub-combination comprising:

a. a first plurality of identical upstanding horizontally elongated rectangular-shaped planar walls having vertical ends and horizontal sides, said walls being equally spaced from each other by a given distance in parallel array with their horizontal sides extending normally to a given line passing through the centers thereof.

b. a plurality of pairs of identical vertically extending tubular posts, each pair of said posts being associated with a different one of said first plurality of walls and each post of each pair being rigidly connected to the one of said first plurality of walls associated therewith along a different one of said vertical ends thereof;

c. a plurality of pairs of identical vertically elongated generally rectangular-shaped planar end walls having vertical sides and horizontal ends, each pair of said end walls being associated with a different one of said first plurality of walls and each end wall of each pair having one of its vertical sides rigidly connected to a different one of said pair of posts with said horizontal ends of said pair of end walls extending normally to said horizontal sides of said one of said first plurality of walls associated therewith in opposite directions therefrom;

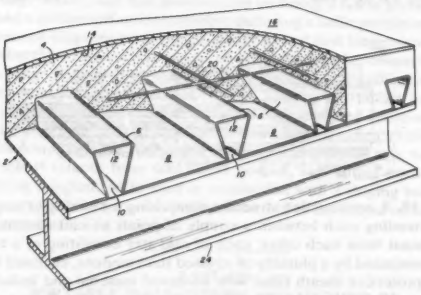
d. a plurality of pairs of identical vertically elongated generally rectangular-shaped planar doors having vertical sides and horizontal ends, each pair of said doors being associated with a different one of said first plurality of walls and each door of each pair being hinged along one of its vertical sides to the free vertical side of a different one of said end walls, each of said doors and the one of said end walls associated therewith having a total horizontal extent substantially equal to said given distance by which said first plurality of walls are spaced from each other and the horizontal ends of said end walls having a length less than one-half of the length of the horizontal ends of said doors;

e. a second plurality of identical upstanding horizontally elongated rectangular-shaped planar walls having vertical ends and horizontal sides, each of said second plurality of walls being positioned between a different pair of said first plurality of walls with one of its vertical ends rigidly connected to the hinged joint between an end wall and door associated with one of said pair of said first plurality of walls and its other end rigidly connected to the hinged joint between an end wall and door associated with the other of said pair of said first plurality of walls;

f. a plurality of identical elongated rectangular-shaped planar top walls each having horizontal sides equal in length to the horizontal sides of said first plurality of walls and horizontal ends substantially equal in length to said given distance by which said first plurality of walls are spaced from each other, each of said plurality of top walls being associated with a different pair of said first plurality of walls with each horizontal side of each top wall rigidly connected to a different one of said pair of said first plurality of walls associated therewith; and

g. means for rigidly connecting each of said first plurality of walls to said substrate.

3,967,426
REINFORCED COMPOSITE SLAB ASSEMBLY
Robert L. Ault, Export, Pa., and Nathan Kelly, Miami, Fla., assignors to Epic Metals Corporation, Pittsburgh, Pa.
Filed May 8, 1972, Ser. No. 251,419
Int. Cl.² E04B 1/16
U.S. Cl. 52—252 11 Claims



1. A composite slab assembly comprising

an elongated metal deck having a number of longitudinally oriented upwardly directed downwardly open integrally formed ribs disposed in alternating relationship with respect to elongated panel sections of said metal deck,

said metal deck panel sections disposed generally within a first plane and said ribs having upper wall portions disposed generally within a second plane generally parallel to and above said first plane,

said downwardly open ribs having a restricted throat opening which is narrower than said rib upper wall portion,

a concrete layer disposed on said metal deck and having longitudinally oriented portions in complementary surface to surface engagement with said metal deck, thereby causing said metal deck into a unitary composite structure,

a transversely oriented integral reinforcing beam formed by thickened portions of said concrete layer,

said metal deck having at least one total discontinuity within which at least a portion of said transverse concrete beam is received,

said upper surface of said concrete layer being disposed generally in a third plane which is above and substantially parallel to said first and second planes,

the lower extremity of said slab being defined generally by said first plane,

the maximum depth of said composite slab being substantially equal to the distance between said first and said third planes,

said composite slab having a maximum depth in the sector of said transverse concrete beam less than or generally equal to the maximum depth or said composite slab in remaining portions thereof,

said transverse reinforcing beam having a lower extremity disposed below the level of said second plane,

at least one elongated generally transversely oriented reinforcing member disposed within and reinforcing said transverse concrete beam, and

support means transversely discontinuously supporting said transverse concrete beam, whereby said composite slab will be monolithic and devoid of filler joists and will span greater lengths between adjacent transverse continuous support walls or members than would be the case without said transverse concrete beam.

3,967,427

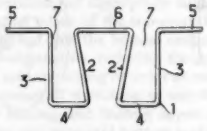
COMPLEX LIGHT METAL FRAMEWORK PRODUCED BY COMBINING SECTIONAL PIECES INTERCONNECTED IN A DETACHABLE MANNER BY MEANS OF FLEXIBLE STRIPS HAVING A NOVEL STRUCTURE

Maurice Piget, Boisset-les-Prevanches, (Eure), France

Filed Sept. 6, 1974, Ser. No. 503,573

Int. Cl.² E04B 2/58

U.S. Cl. 52—502 **7 Claims**



1. A complex metal framework for use in fabricating structural members having means to clamp a sheet like article, said framework comprising:

a. a main sectional piece having a wall defining a plurality of longitudinally extending cavities therein including a central cavity and a plurality of laterally displaced cavities, each lateral cavity having at least one inclined wall, and the central cavity having two inclined walls, each cavity having an open end and a base portion disposed opposite said open end, the width of the open end being less than the width of the base portion;

b. a second sectional piece shape so as to be inserted into one of said cavities such that a first portion of the second sectional piece contacts a portion of the wall defining the cavities and a second portion of the second sectional piece contacts the sheet like article; and

c. a resilient flexible strip inserted into said one cavity, said resilient flexible strip having a short section and a long section the ends of which contact the inclined wall of said one cavity, and a median section formed integral with and located between said short and long sections, said median section contacting the second sectional piece inserted into said one cavity so as to bias said second sectional piece against said sheet like article to clamp said article between said second sectional piece and said main sectional piece.

3,967,428

PORTABLE FLOOR CONSTRUCTION

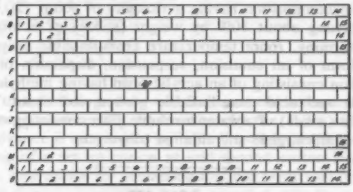
Arthur W. Pierce, Milford, and Robert A. Stoehr, Cincinnati, both of Ohio, assignors to Cincinnati Floor Company, Cincinnati, Ohio

Continuation of Ser. No. 430,216, Jan. 2, 1974, abandoned.

This application Apr. 29, 1975, Ser. No. 577,566

Int. Cl.² E04C 1/30; E04B 1/343

U.S. Cl. 52—582 **12 Claims**



1. A floor panel for use in fabricating sectional floors of the type having an uninterrupted upper surface and including a plurality of like panels, said panel comprising:

a rectangular finished horizontal upper surface having first and second long edges interconnected by two short edges;

first, second, third and fourth brackets mounted beneath said finished surface for forming subsurface connections releasably locking said panel to adjacent panels;

each of said brackets comprising a horizontal arm lying in a plane below the plane of said finished upper surface and extending outwardly beyond the periphery of said panel and adapted to lie in superimposed relationship with a cooperating bracket on an adjacent panel;

said first bracket horizontal arm extending from said panel outwardly beyond a straight line coincident with said first long edge thereof adjacent to a first corner of said panel, said second bracket horizontal arm extending from said panel outwardly beyond a straight line coincident with a first short edge thereof adjacent to a second corner diagonally opposite said first corner, said third bracket horizontal arm extending from said panel outwardly beyond a straight line coincident with the first long edge of said first corner adjacent to a third corner of said panel, and said fourth bracket horizontal arm extending from said panel outwardly beyond a straight line coincident with the intermediate portion of said first long edge;

said first and third arms each being located in different vertical planes below said plane of said finished upper surface to facilitate said superimposed relationship with a cooperating bracket of an adjacent panel when assembled therewith, and said second and fourth arms each being located in different planes below said plane of said finished upper surface to facilitate said superimposed relationship with a cooperating bracket of an adjacent panel when assembled therewith;

each of said horizontal arms having an opening therein disposed entirely outwardly of the periphery of said finished surface and adapted to receive a headed drop pin, said openings of said first, third and fourth arms being located entirely outwardly beyond a straight line coincident with said first long edge, and said opening of said second arm being located entirely outwardly beyond said first short edge and located entirely inwardly of a straight

line coincident with said second long edge, said drop pin being adapted to be inserted downwardly through said opening and through an aligned opening in the cooperating bracket of the adjacent panel to lock said panels together.

3,967,429

METHOD OF GROUTING USING SPECIFIC MORTAR COMPOSITION

David S. Weiant, Morrestown, N.J.; Frank E. Bernett, Yardley, Pa., and William R. Velivis, Trenton, N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Division of Ser. No. 304,727, Nov. 8, 1972, which is a continuation of Ser. No. 105,109, Jan. 8, 1971, abandoned. This application Sept. 4, 1974, Ser. No. 503,153
Int. Cl.[2] E04G 21/00
U.S. Cl. 52—744 29 Claims

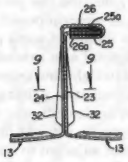
1. A method of setting and grouting tile which comprises employing at room temperature an aqueous non-hydraulic mortar composition having a viscosity of about 120,000 cps comprising about 10% by weight (solids) of a mixture of film-forming, room temperature cross-linkable polymers in the form of an emulsion, suspension, dispersion or partial solution consisting of an acrylic resin having methylol acrylamide and acid cross-linkable groups and about 77% by weight (solids) of a water-insoluble filler consisting of a mixture of silica, glass and alumina trihydrate.

3,967,430

BUILDING METHOD

Gary A. Knudson, 7485 Upham Court, Arvada, Colo. 80002

Division of Ser. No. 408,942, Oct. 23, 1973, Pat. No. 3,902,288, which is a division of Ser. No. 226,173, Feb. 14, 1972, abandoned. This application Nov. 27, 1974, Ser. No. 527,528
Int. Cl.[2] E04G 21/14
U.S. Cl. 52—745 3 Claims



1. In a method of making a building by connecting together a pair of adjacent individual building panels the steps of:

providing a pair of generally U-shaped panels, each said panel having a pair of spaced parallel side portions, one panel having an outturned flange portion extending outwardly of the upper marginal edge and in a direction substantially perpendicular to one of said side portions and a downturned terminal portion forming an inverted channel extending the full length thereof and the other panel having an inturned flange portion extending inwardly of the upper marginal edge and in a direction substantially perpendicular to the other of said side portions positioned in the inverted channel and extending the full length thereof; and

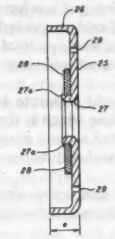
turning substantially the entire length of the downturned terminal portion sharply back in a direction substantially parallel to said outturned flange portion and up against the underside of the inturned flange portion to the extent necessary to engage a substantial portion of the width of said inturned flange portion to form a continuous seam connection along the pair of panels.

3,967,431

SHEAR PLATES

Thomas W. Jones, Buckhorn Lake, Unadilla, N.Y. 13849

Filed July 10, 1975, Ser. No. 594,720
Int. Cl.[2] F16B 7/00
U.S. Cl. 52—753 L 12 Claims



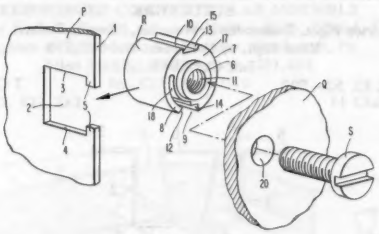
1. A structural interconnection between a bolt and a wooden member, comprising, in combination: an annular piece of metal having an annular flange seated within a recess within said wooden member and an annular central hub having a central opening, and a metal ring surrounding said hub, said hub and said ring being seated within a recess in said wooden member, said wooden member having a bore aligned with said central opening in said hub, and a bolt extending through said central opening and said bore.

3,967,432

PANEL EDGE FASTENER RECEPTACLE AND JOINT

Victor B. Starr, Aston, Pa., assignor to Southco, Inc., Lester, Pa.

Filed July 23, 1975, Ser. No. 598,325
Int. Cl.[2] F16B 5/02
U.S. Cl. 52—758 D 17 Claims



1. A fastener receptacle adapted for installation at the edge of a thin panel, said receptacle comprising:

a. a body of resilient material;

b. a peripheral spring element having one end integral with said body and the other end free;

c. a first peripheral recess located adjacent said other end of said spring element;

d. a second peripheral recess diametrically opposite said first recess;

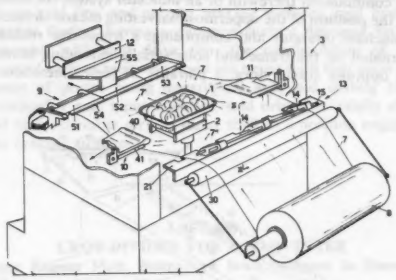
e. said first and second recesses adapted to engage and cooperate with the edges of an opening prepared in said panel in which said receptacle is to be installed;

f. said spring element being adapted to be flexed inwardly toward the center of said body by one edge of said panel opening during installation and then to return outwardly to its unflexed position as, during installation, the spring element passes beyond said edge of said panel opening, said spring element in its unflexed outward position being adapted to retain said receptacle in said panel opening.

3,967,433
PROCESS AND MACHINE FOR WRAPPING AND PACKAGING ITEMS IN STRETCHABLE FOIL MATERIAL

Sergio Bonfiglioli, Via Emilia Ponente 14, Bologna, Italy

Filed Sept. 19, 1974, Ser. No. 507,424
Claims priority, application Italy, Oct. 5, 1973, 29819/73
Int. Cl.² B65B 11/16
U.S. Cl. 53—30 R 7 Claims



1. A process for wrapping and packaging a tray-like receptacle containing a generally irregularly shaped article in a foil sheet of stretchable plastic material, which receptacle has a flat bottom shallowly recessed from a low, outwardly-curved rim, said process comprising the steps of:

a. positioning said receptacle on a support at a wrapping location;

b. unreeling a section of a continuous foil web from a storage roll under evenly distributed tensile stress by gripping the leading edge of said foil and translating the foil section to said wrapping location in a direction normal to the leading edge proximate said supported receptacle;

c. stretching said foil section by a predetermined amount in at least the dimension transverse to the unreeling direction from locations at opposite sides of said supported receptacle;

d. longitudinally holding fast the transversely stretched foil section while severing said section from said storage roll to form a sheet from said foil section;

e. bringing said article-containing receptacle into contact with the stretched foil sheet while folding the longitudinally extending edges of the transversely stretched sheet over said rim and onto the bottom surface of said receptacle and simultaneously reducing the transverse tension effected by said stretching in order to maintain the predetermined amount of stretching in said foil;

f. folding the leading and trailing edges of said foil sheet over said rim and onto said bottom surface of said receptacle; and

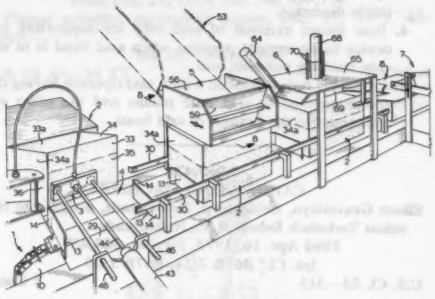
g. welding said leading, trailing and longitudinally extending edges to said bottom surface.

3,967,434
CARTONNING APPARATUS

Derek Mancini, Stouffville, Canada, assignor to Portion Packaging Limited, Rexdale, Canada

Filed May 19, 1975, Ser. No. 578,713
Int. Cl.² B65B 43/28
U.S. Cl. 53—186 17 Claims

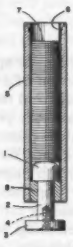
7. An automatic cartonning apparatus comprising a conveyor, means for advancing said conveyor a predetermined distance, means operable following conveyor advance to withdraw a single carton blank from a stack of carton blanks and open same up to a set up condition ready to receive a plurality of articles on said conveyor at a first position, said carton in said set up condition having a closed bottom and open top end and side flaps, means for guiding articles into a set up carton at a second carton loading position displaced along the conveyor path a whole multiple of said predetermined distance from said first position, means operable following conveyor advance for closing the carton end flaps at a third carton flap closing position displaced along the conveyor path a whole multiple of said predetermined distance from said second loading position, means for closing the carton side flaps subsequently to the closing of the end flaps and control means for said conveyor advancing means whereby the event of conveyor advance is adapted to be related to the completion of the filling of a set up carton at said second carton loading position, said means for advancing said conveyor said predetermined distance comprising an oil operated cylinder driven by compressed air.



3,967,435
COIN-STACKING AND COUNTING DEVICE

Gerard J. Bergmaier, 1238 Union Ave., Delair, N.J. 08110

Filed Sept. 13, 1974, Ser. No. 505,842
Int. Cl.² B65B 67/02
U.S. Cl. 53—254 1 Claim



1. A coin-stacking and counting device for use with an open-ended coin wrapper having a length greater than the height of a stack of a predetermined number of coins to be wrapped to provide at each end of the wrapper an end portion capable of being folded over to enclose the end of said stack comprising:

1. a coin-holding tube circular in cross section and of diameter slightly greater than the diameter of said coins and having an open coin-receiving end for receiving said coins and the length of said tube being slightly greater than the sum of (1) the height of said stack of predetermined number of coins and (2) said diameter;

2. a coin-supporting head contained within said tube at the other end thereof and movable within said tube into a coin-stacking position and a wrapper-sealing position, said head extending into said tube in said coin-stacking position a distance such that the distance from the top of said head to the top of the coin-receiving end of said tube equals the height of said stack of said predetermined number of coins, said head having a length substantially equal to the radius of said tube so that the distance from

the top of said head to said other end, in said wrapper-sealing position, is substantially equal to the radius of said tube; said head having a convex shape to hold said coins in a horizontal position and to position angularly inserted coins in said horizontal position;

3. a sleeve at said other end of said tube having a diameter equal to the inside diameter of said tube and having an opening therein, the diameter of which is less than said inside diameter;

4. base means external of said tube for supporting said device in an upright position when said head is in said coin-stacking position; and

5. a movable rod positioned within said opening having one end connected to said base means and the other end connected to the bottom of said head.

3,967,436

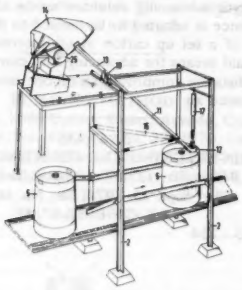
CAPSULATING MACHINE

Elbert Gravesteyn, Leiderdorp, Netherlands, assignor to Heineken Technisch Beheer B.V., Netherlands

Filed Apr. 16, 1975, Ser. No. 568,457

Int. Cl.[2] B65B *7/28;* **B67B** *3/00*

U.S. Cl. 53—315 **3 Claims**



1. A capsulating machine for applying covers or caps to the opening of the neck portion of a container, such as the bung hole closure on beer casks and the like comprising a frame, a sloping feed chute for said caps pivotally carried by said frame for movement in a vertical plane, a cap dispenser carried at the end of said chute, means on said frame for guiding said containers beneath said cap dispenser and with said opening in alignment with said dispenser, spring loaded positioning cams for retaining the leading cap in position in said dispenser, means for normally retaining said dispenser at a position below said container opening, said chute functioning as a camming means to raise the dispenser upon engagement by a container neck and force the leading cap into engagement therewith and prevent displacement of the leading cap upon contacting a container surface of greater size than said neck and means within said dispenser to effect pressure engagement of said cap with said neck and urge it into tight engagement therewith.

3,967,437

INDICATOR FOR A HARVESTING PLATFORM

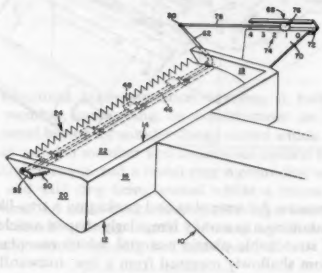
Roger Eugene Mott, Bettendorf, and Jerry Gary Barnett, Davenport, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 13, 1975, Ser. No. 586,565

Int. Cl.[2] A01D *67/00;* **G09F** *9/00*

U.S. Cl. 56—10.2 **4 Claims**

1. In a mobile harvesting machine having a transversely elongated harvesting platform including a frame with opposite lateral sides and harvesting means mounted forwardly on the frame and including a plurality of generally fore and aft, transversely spaced mounting means connecting the harvesting means on the frame for independent vertical adjustment of sections of the harvesting means relative thereto within a limited range each mounting means including an independently vertically adjustable harvesting means element, the vertical position of which is responsive to the vertical position of the respective harvesting means section, and ground engaging means operatively connected to the respective harvesting means elements for vertically adjusting the harvesting means elements in response to changes in the contour of the ground, the combination therewith of an indicator system for indicating the position of the uppermost harvesting means element to a machine operator and comprising: a transverse rockshaft journaled on the frame and substantially extending between the opposite frame sides; a plurality of feeler members at-



tached to and extending radially from the rockshaft and being respectively engageable with the uppermost of the harvesting means elements so that vertical adjustment of the uppermost harvesting means elements causing rotation of the rockshaft; a stationary indicator element mounted on the platform adjacent one of the platform sides; a movable indicator element mounted on the platform adjacent the stationary element for shifting movement relative thereto; and connecting means operatively connecting the rockshaft to the movable indicator element for shifting the movable indicator element relative to the stationary indicator element in response to rotation of the rockshaft, so that the position of the movable indicator element relative to the stationary indicator element is responsive to the position of the uppermost harvesting means element relative to the frame.

3,967,438

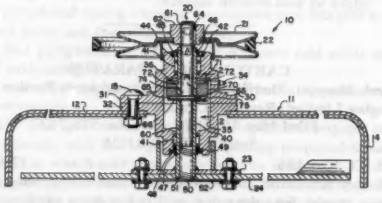
ROTARY MOWER SPINDLE ASSEMBLY

Michael D. Tombers, Merrillville, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 18, 1975, Ser. No. 569,238

Int. Cl.[2] A01D *35/26*

U.S. Cl. 56—113 **12 Claims**



1. In a rotary mower having a housing, a vertical spindle assembly mounted on said housing, a power input member mounted at the upper end of said spindle assembly and adapted to be rotatably driven from an associated source of

power, and a rotary impact cutting blade mounted to the lower end of said spindle assembly for high speed rotation, the improvement wherein said spindle assembly comprises a support sleeve having a first braking surface, a hollow outer shaft journalled in said sleeve and having a circumferential slot, an inner shaft mounted for rotation within said outer shaft, a radially extending drive pin fixed in said inner shaft in registry with said circumferential slot and extending therethrough, a brake member having a second braking surface mounted on the outside of said outer shaft for rotation therewith, said braking member being axially movable on said outer shaft to engage said first and second braking surfaces, said braking member further having a cammed surface disposed for engagement with said drive pin, the configuration of said cammed surface relative to said pin being such that upon said source of power being interrupted and said cutting blade overrunning said input member, said drive pin axially shifts said brake member on said outer shaft to a position engaging said braking surfaces.

3,967,439

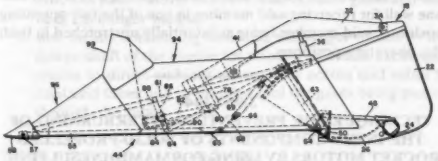
CROP DIVIDER FOR A HARVESTER

Roger Eugene Mott, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 24, 1975, Ser. No. 598,851

Int. Cl.² A01D *63/00*

U.S. Cl. 56—314 **17 Claims**



1. In a harvesting machine having a forwardly disposed transversely elongated platform including a frame with opposite upright side walls and a crop handling means mounted on the frame and including a harvester reel mounted on and extending between a pair of generally fore and aft arms mounted on the frame for vertical adjustment and including control means for controlling the position of the arms, and transverse crop engaging members having opposite ends inwardly of and adjacent to the side walls, the combination therewith of at least one crop divider mounted on and extending forwardly from a side wall and comprising: a generally fore and aft divider frame; a first transverse pivot means adjacent the rearward end of the divider frame swingably mounting the divider frame on the side wall for vertical adjustment relative thereto between a lower operating position and a raised transport position; a divider skin mounted on the divider frame and including a forwardly converging forward portion tapering to a divider point located adjacent the ground when the frame is in its operating position; lock means selectively operative between the divider frame and the platform side wall for selectively locking the divider frame to the side wall in a selected position about said first pivot means; and connecting means operatively connecting the divider frame to the adjacent reel arm for vertical adjustment of the divider when the divider frame is not locked to the side wall in response to a predetermined amount of vertical adjustment of the reel arm.

3,967,440

DEVICE FOR CUTTING A TAIL-END OF A YARN PACKAGE FORMED ON A BASE PORTION OF EACH SPINDLE IN A TEXTILE MACHINE

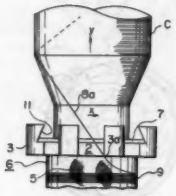
Akio Narumi, Obu; Shuji Takahisa, Toyota; Masanao Kobayakawa, Anjyo, and Yoshihal Fujimoto, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan

Filed Dec. 27, 1974, Ser. No. 536,750

Claims priority, application Japan, Dec. 27, 1973, 49-298[U]

Int. Cl.² D01H *1/38*

U.S. Cl. 57—34 TT **5 Claims**



1. In a device for cutting a tail-end yarn portion connecting a spiral wind formed on a yarn package and a tail-end winding formed on a base portion of each spindle of a textile machine, which supports said yarn package, at a time of carrying out the doffing operation, an improvement comprising a cylindrical crip member coaxially mounted on said base portion of each spindle for forming said tail-end yarn portion thereon, a guide member coaxially formed on said crip member and a ring shaped cutter incased in said guide member, said guide member provided with an upwardly opened ring shaped recess thereon for stably receiving said cutter and a plurality of cut-out grooves formed at a circumferential edge portion thereof, said cutter provided with a sharp knife edge formed at a circumferential side thereof and a part of said knife edge projected upward from a bottom surface of each said cut-out groove of said guide member, but positioned within the outer-periphery of said guide member, said crip member provided with a knurled surface, the diameter of said guide member being sufficiently larger than the diameter of said crip member so that said tail-end yarn portion is capable of sliding on said knife edge of said cutter at anyone of said cut-out grooves of said guide member under tensioned condition when said yarn package is taken from said spindle.

3,967,441

YARNS AND PROCESS FOR PRODUCTION THEREOF

Katsumi Yasuzuka, Uji; Takaaki Matsuo, Kyoto, and Hachiro Fujiwara, Uji, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Apr. 29, 1974, Ser. No. 464,878

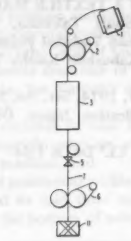
Claims priority, application Japan, Apr. 28, 1973, 48-48200

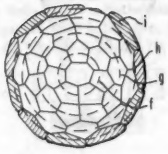
Int. Cl.² D02G *3/00, 1/00;* **D01G** *1/06;* **D01H** *5/30*

U.S. Cl. 57—140 J **45 Claims**

1. A yarn comprising thermoplastic synthetic staple fibers in which the individual fibers constituting the yarn contain twisted crimps and have cross-sectional surfaces with a markedly flattened portion, in which the staple fibers contained therein have broken ends comprising mainly portions flat-

tened to a lesser degree, a plurality of fibers having this structure uniformly and alternately forming the surface and inner





layers of the yarn and being intertwined at fluffs formed of the broken ends of the individual fibers.

3,967,442

ELECTRIC WATCH HAVING AN ELECTROMECHANICAL MOVEMENT INCLUDING A CORRECTION MECHANISM FOR SMALL ERRORS

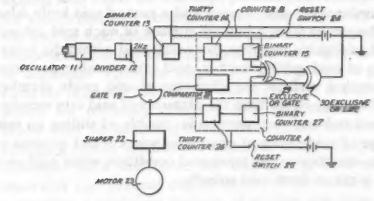
Jean-Claude Berney, Chemin de la Croix-Rouge 2, Lausanne, Switzerland

Continuation of Ser. No. 438,455, Jan. 31, 1974, abandoned. This application July 14, 1975, Ser. No. 595,687

Claims priority, application Switzerland, Feb. 1, 1973, 1418/73

Int. Cl.² G04C 3/00

U.S. Cl. 58—23 R **7 Claims**



1. An electric watch comprising a precise resonator, an oscillator coupled to said resonator, a frequency divider connected to the oscillator, a watch movement including drive means therefor and means coupled to the frequency divider and the drive means of the watch movement for controlling the operation thereof to eliminate errors in indicated time, the latter means comprising a first counter coupled for synchronized operation with said drive means of the watch movement, a second reference counter connected to said divider, comparison means connected to said counters for comparing the states thereof and coupled to said drive means of the watch movement for maintaining the counters in phase while varying the speed of the watch movement, and first and second reset means for respectively setting the said first and second counters independently of each other from outside the watch.

3,967,443

TURBOFAN ENGINE WITH FLEXIBLE, VARIABLE AREA NOZZLE

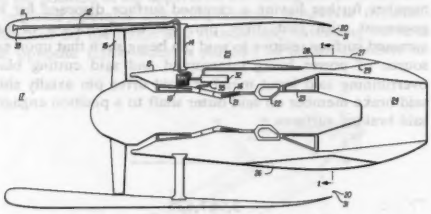
Davis Roberts McMurtry, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

Division of Ser. No. 352,921, April 20, 1973, Pat. No. 3,913,626. This application Feb. 21, 1975, Ser. No. 551,980

Claims priority, application United Kingdom, Apr. 27, 1972, 19605/72

Int. Cl.² F02K 1/10, 3/06

U.S. Cl. 60—226 R **5 Claims**



1. A gas turbine engine comprising: an engine casing and a centrebody comprising two walls defining therebetween a main discharge duct for propulsive gases; means for varying the flow area of said duct comprising a flexible flow area varying member, said member having only two operating positions; means for attaching said member to one of said two walls; fluid pressure means for changing the shape of said member between the two operation positions wherein the flow area of said duct is varied; and means defining a recess in said one wall for receiving said member in one of the two operating positions, said member being substantially unstretched in both the operating positions.

3,967,444

TECHNIQUE FOR PREVENTING AFTERBURNING OF THE INERT COMPONENTS OF SOLID-PROPELLED ROCKET MOTORS BY USING FORMAMIDINESULFINIC ACID IN THE BINDER OF THE INERT COMPONENTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 30, 1974, Ser. No. 510,517

Int. Cl.² F02K 9/04

U.S. Cl. 60—255 **9 Claims**

1. In combination: a solid propellant rocket motor comprising a rocket motor case; one or more solid propellant grain increments disposed within said case; and an inert rocket motor component comprised of formamidinesulfinic acid with a binder and a curing agent for said binder, said inert rocket motor component being in the form of a thermal barrier-liner composition for bonding to said solid propellant grain increment, said formamidinesulfinic acid when in said component being effective in preventing afterburning of said inert rocket motor component.

3,967,445

EXHAUST PURIFIER SYSTEM

Frank A. Manfredi, 2026 W. 95th St., Cleveland, Ohio 44102

Continuation of Ser. No. 281,542, Aug. 17, 1972, abandoned. This application June 21, 1974, Ser. No. 481,489

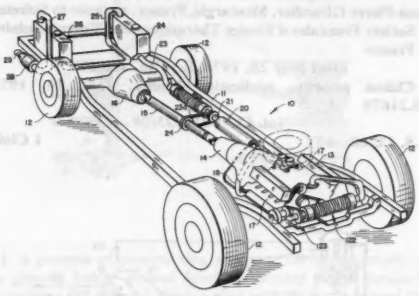
Claims priority, application Italy, Dec. 24, 1972, 32916/72; Feb. 22, 1972, 20889/72

Int. Cl.² F01N 3/10

U.S. Cl. 60—279 **11 Claims**

1. In a motor vehicle of the type including a fuel burning engine from which exhaust gases are discharged, the engine driving a shaft, the improved exhaust purification system comprising:

a. conduit means connected at one end to the engine for receiving exhaust gases discharged by the engine and discharging exhaust gases to the atmosphere through the other end;
b. burner means interposed between said conduit ends to burn hydrocarbon agents present in the exhaust gases;
c. heat exchanger means interposed between said conduit ends in series with said burner means for cooling the exhaust gases prior to their discharge to the atmosphere;
d. said heat exchanger means comprising a rotating structure including an input at one end and an output at the



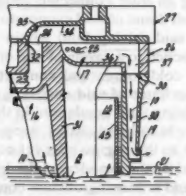
other end with a plurality of longitudinally extending tubes forming a path through which the exhaust gases are passed which extends back and forth between said ends of said heat exchanger means a plurality of times enabling efficient heat transfer between said exhaust gases and said heat exchanger means;
e. and means connecting said heat exchanger means to the driven shaft of the engine for rotating said heat exchanger means to direct ambient air currents across said tubes to cool said tubes and to thereby cool the gases being passed through the tubes.

3,967,446

EXHAUST RELIEF SILENCING APPARATUS FOR MARINE PROPULSION SYSTEMS

Joseph H. Harralson, and William F. Wurzbach, both of Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Aug. 26, 1974, Ser. No. 500,634
Int. Cl.² F02B *27/02*; B63H *5/13*; F01N *7/12*
U.S. Cl. 60—312 **21 Claims**



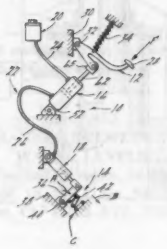
1. In an outboard propulsion unit including an exhaust housing means having a main exhaust passageway means terminating in a main exhaust nozzle means for discharging of exhaust gases, said main exhaust nozzle means being below the idle water line whereby water moves into the main exhaust passageway means and creates a back pressure condition in said exhaust passageway means at idle, an idle exhaust passageway means communicating with the main exhaust passageway means and terminating in exhaust port means to provide essentially unrestricted flow therefrom, said idle exhaust passageway means including silencing means having a resonator cavity means located adjacent to said idle exhaust passageway means and connected thereto by at least one opening and operable to modify the flow of exhaust gases through the idle exhaust passageway means and limit the pressure waves therein caused by engine operation.

3,967,447

HYDRAULIC MASTER-SLAVE CLUTCH SYSTEM

Robert W. Hegel, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Oct. 25, 1974, Ser. No. 517,867
Int. Cl.² F15B *7/10*
U.S. Cl. 60—572 **15 Claims**



1. A hydraulic actuating system comprising,
a first piston and cylinder assembly including means for causing a first piston to move within a first enclosure in response to actuation of a controller member,
a second piston and cylinder assembly including a second piston movable within a second enclosure from a non-actuated position to an actuated position to operate a controlled member,
said first and second piston and cylinder assemblies being of substantially identical construction,
means for causing said first piston to move toward one end of said first enclosure and yieldable to permit said first piston to move toward the opposite end of said first enclosure upon actuation of said controller member.
fluid circuit means including conduit means communicating fluid from said one end of said first enclosure to said second enclosure for biasing said second piston from said nonactuated position towards said actuated position,
a fluid reservoir communicable with said fluid circuit,
normally closed valve means operative in response to preselected movement of said pistons within the associated of said enclosures toward said non-actuated positions to open and thereby communicate said reservoir with said circuit means, and
spring means associated with said system and operable to cause said pistons to move toward said non-actuated positions and thereby effect automatic opening of said valve means upon de-actuation of said controller member.

3,967,448

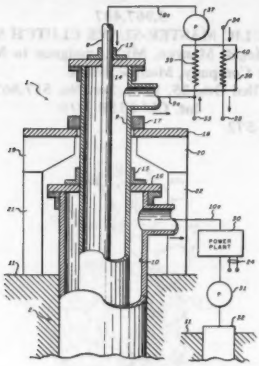
GEOTHERMAL ENERGY WELL CASING SEAL

Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 29, 1974, Ser. No. 492,630
The portion of the term of this patent subsequent to July 23, 1991, has been disclaimed.
Int. Cl.² F03G *7/00*; F01K *23/00*
U.S. Cl. 60—641 **9 Claims**

1. In geothermal deep well pump apparatus of the kind including deep well pump means having input means for pumping a first fluid always in liquid state through well casing means in cooperative energy exchanging relation with respect to a second fluid for producing a working fluid:

turbine means at said deep well pump means for driving said deep well pump means in response to said working fluid,
conduit means for passage of said working fluid residue to the earth's surface from said turbine means,



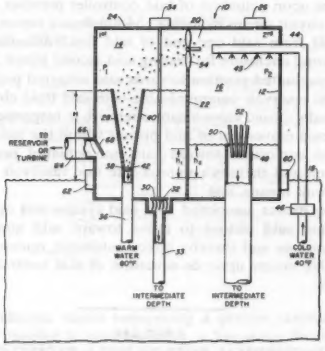
said turbine means being suspended within said deep well by said conduit means, and
resilient seal means disposed in sliding relation between said pump means input means and said well casing means.

3,967,449

OCEAN THERMAL GRADIENT POWER PLANT

Earl J. Beck, 3045 Grove St., Ventura, Calif. 93003

Filed May 29, 1975, Ser. No. 582,017
Int. Cl.² F03G 7/04
U.S. Cl. 60—641 **50 Claims**



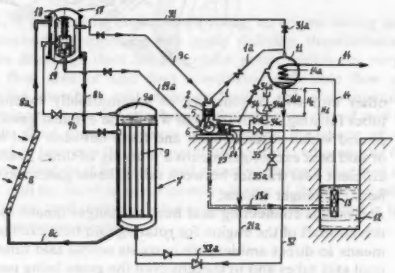
1. An ocean thermal gradient hydraulic power plant comprising:
a. a hull having interconnecting first and second air-evacuated, barometric compartments, each said compartment being partially submerged below the surface of the ocean and having a static hydraulic head therein;
b. a steam lift pump disposed in said first compartment for creating a working hydraulic head above said static hydraulic head in said first compartment, the interconnection between said first and second compartment being located above the level of said working hydraulic head;
c. means located in said second compartment for maintaining said working hydraulic head created in said first compartment; and
d. means located in said first compartment for translating the available energy of said hydraulic working head into mechanical energy.

3,967,450

POWER-GENERATION SYSTEM COMPRISING AN ENGINE ACTUATED BY THE EXPANSION OF A LIQUEFIABLE GASEOUS FLUID

Jean-Pierre Girardier, Montargis, France, assignor to Sofretes-Societe Francaise d'Etudes Thermiques et d'Energie Solaire, France

Filed May 28, 1974, Ser. No. 474,090
Claims priority, application France, June 14, 1973, 73.21679
Int. Cl.² F01K 25/08
U.S. Cl. 60—657 **1 Claim**



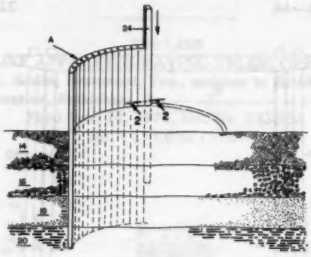
1. In a power generating system operating under a low-gradient thermal cycle, such as in a power plant using solar or geothermal heat, said system comprising a liquefiable driving fluid at least partly usable for lubrication in its liquid form, a low-gradient evaporator associated with a heat source such as a solar or geothermal heat collector, for evaporating said driving fluid, an engine impervious to the surrounding atmosphere and having an inlet connected through an admission line to a drawing-off dome of said evaporator, and actuated by the expansion of said driving fluid within a cyclic-variation volume device attached to a casing of said engine, a condenser associated with a cold source and connected through a discharge line to an exhaust of said engine, a re-injection pump for feeding the driving fluid condensed in the condenser back into the evaporator in a closed circuit, a separator arranged on the admission line to the engine inlet for collecting the liquid elements entrained by the evaporated driving fluid that leaves said evaporator, and a drawing-off line connecting said separator to the engine casing for conveying the liquid elements to the engine casing, said separator being connected to the condenser through an overflow line; the improvement wherein said separator comprises heating means supplied from said heat source of the evaporator, and comprising an inner closed vessel connected to the drawing-off line by means of an obturable outlet, and a floatvalve for temporarily opening said outlet each time the level of liquid collected within the vessel reaches a predetermined height, said heating means comprising a jacket arranged at least partly around said vessel and having an inlet connected to an outlet of the fluid from said heat source of the evaporator, said jacket also having an outlet for said fluid connected to an inlet of the evaporator.

3,967,451

STORAGE FACILITY WITH INTEGRAL FOUNDATION

Carl W. Garbe, San Carlos, Calif., assignor to Dames & Moore, San Francisco, Calif.

Filed Sept. 11, 1974, Ser. No. 505,184
Int. Cl.² B65G 5/00
U.S. Cl. 61—.5 12 Claims



1. A process of constructing a storage facility interiorly of the ground below ground level for storing liquid products comprising the steps of: driving piles into the earth around the storage facility perimeter to form a substantially circular closed pile perimeter around a first diameter; said piles penetrating into the earth and extending above the earth a preselected distance in contiguous side-by-side relation to form said closed perimeter; after forming said closed pile perimeter, excavating below existent ground level interiorly of said closed pile perimeter to said intended storage facility depth to cause soil pressure from the exterior of said pile perimeter toward the interior of said pile perimeter to urge said piles into continguous side-by-side relation; before and during said excavating step placing at least one substantially circular wale extending horizontally at an elevation between the top of said facility and the bottom of said facility having a second outside diameter less than said first diameter whereby said piles are urged into contiguous side-by-side relation by soil pressure from the exterior of said piles toward the interior of said pile perimeter; placing said excavated spoils immediately exterior of said closed pile perimeter on said ground; and, compacting said excavation spoils to form about that portion of the closed pile perimeter above the earth an embankment having an inward force on said closed pile perimeter having a static force on the exterior of said closed pile perimeter in excess of the static pressure from said liquid product on the interior of said closed perimeter.

3,967,452

RAIN GUTTER AND DOWNSPOUT CONNECTION

John E. Maloney, Jr., Addison, and Richard F. Zaccagni, Lombard, both of Ill., assignors to ZMC, Inc., Addison, Ill.

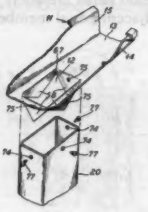
Division of Ser. No. 341,519, March 15, 1973, Pat. No. 3,821,890. This application June 5, 1975, Ser. No. 584,149
Int. Cl.² F16L 21/00; E02B 9/04; E04D 13/08
U.S. Cl. 61—15 7 Claims

1. In a rain gutter formed from sheet material and having a flat bottom wall prepared for connection of a downspout thereto:

a downspout opening in said bottom wall having a continous downturned lip flange around the edge of the opening derived from material displaced from the area of the opening; and

a plurality of depending attachment tabs at spaced intervals on said flange and also derived from the material displaced from said area;

said tabs having screw holes therethrough; whereby the lip flange and the tabs can be engaged within the upper end of a downspout and the downspout secured to the tabs by screws engaged in said screw holes and the bottom wall



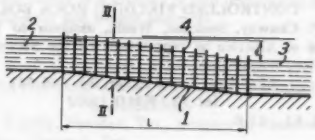
remaining solid and free from any other openings in the area about said downspout opening.

3,967,453

CONNECTING CHANNEL BETWEEN TWO DIFFERENT WATER LEVELS

Vincent Bauzil, 4, rue Sall l'Eveque, 34-Montpellier, France

Filed Sept. 18, 1973, Ser. No. 398,472
Int. Cl.² E02B 3/10, 7/00
U.S. Cl. 61—30 32 Claims



1. A connecting channel arrangement for connecting two different water levels; said arrangement comprising:

a channel means extending between said two different water levels,

a plurality of flexible finger-like means arranged in said channel means for obstructing free flow of water in order to obtain a reduction in the water flow rate and velocity through said channel means, said flexible means being sufficiently deflectible to permit passage therebetween of floating articles such as boats and debris, and

means for controlling the flexibility of each of said plurality of flexible finger-like means such that the deflection of each of said plurality of flexible finger-like means is regulated between a maximum rigidity obstructing free flow of water through said channel means and a minimum rigidity permitting said passage of floating articles therethrough.

3,967,454

TRENCH SHORING APPARATUS

Miles W. Barnes, 315 Third St., Long Beach, Calif. 90802

Filed Feb. 3, 1975, Ser. No. 546,274
Int. Cl.² E02D 5/02, 5/06
U.S. Cl. 61—41 A 10 Claims

1. A self propelled trench shoring apparatus comprising:

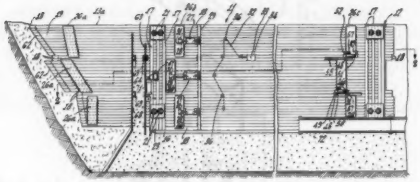
a frame supported on a lower supporting surface of said trench and adapted for travel therealong, said frame defining opposed, transversely spaced apart sides, each side comprising a plurality of longitudinally spaced uprights and a plurality of longitudinally extending supports carried by said uprights in spaced relationship to each other;

panel members disposed between pairs of said supports for longitudinal movement with respect thereto;

locking means carried by each of said panel members for engagement with locking means on adjacent panel members for cooperative engagement therebetween to lock

adjacent panel members together for movement in unison;

means for disengaging said locking means for longitudinal movement of said panel members with respect to at least one of said adjacent panel members;



reversible drive means for urging said panel members longitudinally between a retracted position and an extended position with respect to said frame; and

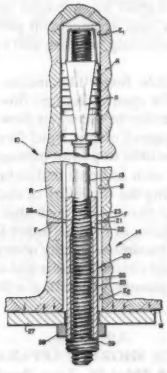
means controlling said drive means for the extension of said panel members and for reversing said drive means responsive to the position of said panel members for the simultaneous retraction thereof in cooperation with said locking means.

3,967,455

CONTROLLED YIELDING ROCK BOLT

John P. Conway, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 3, 1975, Ser. No. 546,641
Int. Cl.[2] E21D *21/02*
U.S. Cl. 61—45 B 8 Claims



1. A yielding fastener assembly comprising

a rod extending between two areas to be fastened together,

anchor means at one end of said rod for connection to the adjacent area, and

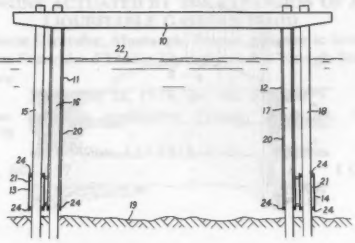
yieldable coupling means at least at the other end, said coupling means including a means movable along said rod and deformable holding means interacting between said rod and said movable means to allow substantially constant tension movement over an extended distance, and means for connecting the movable means to the area to be fastened adjacent said other end, whereby upon application of a predetermined force between said two areas, controlled relative movement is permitted to prevent exceeding the elastic limit of said rod.

3,967,456

SEALING DEVICES

William Bundy Stone, Norwich, England, assignor to Deep Sea Grouting Packers, Inc., Houston, Tex.

Filed Nov. 14, 1974, Ser. No. 523,803
Claims priority, application United Kingdom, Nov. 19, 1973, 53645/73; Mar. 5, 1974, 9886/74
Int. Cl.[2] E02D *5/34*; F16J *15/40*
U.S. Cl. 61—46 22 Claims



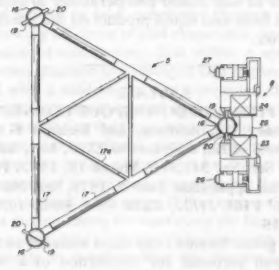
1. A sealing device for sealing an annular space disposed between a tubular supporting leg or a tubular piling can and a pile which passes through either of said tubular supporting legs or said tubular piling can, said tubular supporting leg and tubular piling can supporting a permanent platform disposed above the sea, said sealing device comprising an annular housing which includes an annular protective guard, said annular housing containing an annular sealing element and said annular protective guard being disposed between said annular sealing element and said pile before a seal is made with said pile, and actuating means for causing relative axial movement between the annular protective guard and the annular sealing element, said axial movement releasing the annular sealing element whereby the annular sealing element moves into direct sealing contact with the pile.

3,967,457

SELF-ELEVATING OFFSHORE DRILLING UNIT LEGS

Peter M. Lovie, Houston, Tex., assignor to Engineering Technology Analysts, Inc., Houston, Tex.

Filed July 11, 1974, Ser. No. 487,574
Int. Cl.[2] E02B *17/00*; F16H *19/04*
U.S. Cl. 61—46.5 17 Claims



4. An offshore drilling unit of the self-elevating type having a floatable hull and a plurality of legs movable from a raised position, in which said legs are supported by said hull in a body of water, to a lowered position, in which the hull is supported by said legs on the floor of said body of water; said legs comprising a plurality of mutually parallel tubular chord members rigidly interconnected by structural bracing members, said tubular chord members comprising elongated tubular body means and elongated plate means, lying in a plane including

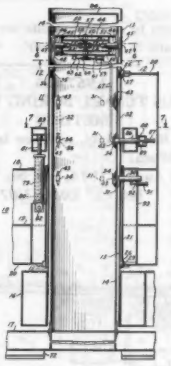
the longitudinal axis of said tubular body means, rigidly connected to and spanning the interior of said tubular body means, said chord members comprising a pair of rack members, each of which is provided with a set of rack teeth, one rack member being on one side of said tubular body means and the other on the opposite side of said tubular body means and projecting radially away from said tubular body means in a plane substantially corresponding with the plane of said plate means.

3,967,458

MARINE APPARATUS HAVING TELESCOPIC LEGS

Ralph E. Scales, Beaumont, Tex., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 14, 1974, Ser. No. 523,934
Int. Cl.² E02B *17/00*
U.S. Cl. 61—46.5 **26 Claims**



1. Marine apparatus comprising
a. a platform,
b. a plurality of telescopic legs for supporting said platform, each leg including an inner section slidably mounted within an outer section,
c. guide means on said platform mounting each outer section for substantially vertical movement in either direction relative to said platform,
d. a frame member attached to the lowe ends of each outer section,
e. locking means carried by one of said sections and releasably engageable with the other section for restraining relative, substantially vertical movement therebetween in either direction, and
f. jacking mechanism mounted solely on said platform and including vertically spaced and relatively vertically movable upper and lower holding means selectively engageable with said outer section and with said inner section for selectively effecting or restraining relative, substantially vertical movement in either direction between said platform and said sections and between said sections.

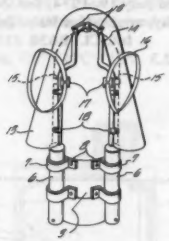
3,967,459

INDEPENDENT WEIGHT SYSTEM

David R. Denis, Azusa, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed Jan. 23, 1975, Ser. No. 543,634
Int. Cl.² B63C *11/02*
U.S. Cl. 61—70 **8 Claims**

1. An independent weight system for underwater breathing equipment having a compressed air tank and a flotation device attached to a supportive backpack assembly, said weight system comprising:
a weight assembly having;
at least one weight receptacle;
a plurality of weights positioned within said weight receptacle;



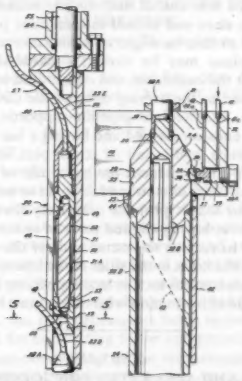
restraining means located at the base of said weight receptacle, said restraining means being manually activatable to release said plurality of weights; and
a clamping means securing said weight receptacle to said tank, said clamping means mounting said weight to said tank whereby the center of gravity of said underwater breathing equipment and attached weight assembly is below the center of buoyancy of said underwater breathing equipment and weight assembly.

3,967,460

APPARATUS FOR USE IN REPLACING BROKEN GUIDELINES

Thomas G. Cassity, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Mar. 21, 1975, Ser. No. 560,984
Int. Cl.² F16L *1/00*; E21B *7/12*
U.S. Cl. 61—72.3 **14 Claims**



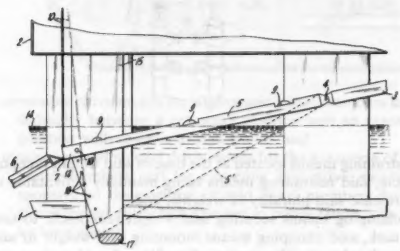
1. Apparatus for use in replacing a broken guideline which is anchored at its lower end to an underwater guidepost, comprising a body lowerable into supported position on the guidepost, cutting means carried on the body, a replacement guideline having its lower end carried on the body, and remotely controllable means carried by the body for operating the cutting means to cut the broken guideline close to the guidepost and for moving the lower end of the replacement guideline into anchored position on said guidepost, said body being separable from the cutting means and the replacement guideline to permit it to be raised from supported position upon anchoring of the lower end of the replacement guideline.

3,967,461

RAMP FOR SLIDABLY SUPPORTING A PIPELINE TO BE LAID ON A SUBMERGED BED

Giovanni Rosa, and Pasquale Brando, both of San Donato Milanese, Italy, assignors to Saipem S.p.A., San Donato Milanese, Italy

Filed July 19, 1974, Ser. No. 489,920
Claims priority, application Italy, July 20, 1973, 26817/73
Int. Cl.[2] B63B *35/04*
U.S. Cl. 61—72.3 3 Claims



1. Apparatus for laying a pipeline on a submerged bed, including a catamaran having an awning deck, a stern end and a bow end, and means for slidably supporting said pipeline on the catamaran including a slightly inclined fixed ramp integral with the awning deck of the catamaran upon which the operations for building the pipeline to be laid are carried out and a movable stinger extending from the stern of the catamaran, wherein the improvement comprises, an intermediate pipeline-supporting element hinged at its bow to the stern end of said slightly inclined ramp and having its stern end pivotally hooked to the bow end of said stinger, means for raising and lowering the stern end of said intermediate pipeline-supporting element so that its angle of inclination with respect to a horizontal plane may be varied, a castle-shaped structure located abaft the catamaran and constituted by two side frame members fixed to the awning deck of the catamaran so as to straddle the intermediate pipeline-supporting element with their lowest ends submerged and having a bar connecting said submerged ends, and a pair of check pins, said intermediate pipeline-supporting element having a pair of sides each provided with a hole at its stern end adapted to receive one of said check pins so that it projects outwardly therefrom, the side frame members having aligned pairs of spaced holes adapted respectively to receive the outer ends of the check pins projecting from the holes in the sides of the intermediate pipeline-supporting element to lock it in the position in which it has a selected angle of inclination with respect to a horizontal plane.

3,967,462

METHOD AND APPARATUS FOR JOINING A SUBSEA PIPELINE TO AN OFFSHORE PLATFORM RISER

Jan DeJong, Delta, Canada, assignor to Lockheed Petroleum Services Ltd., New Westminster, Canada

Filed Mar. 10, 1975, Ser. No. 557,121
Int. Cl.[2] F16L *35/00*
U.S. Cl. 61—72.3 6 Claims

1. Apparatus for joining a subsea pipeline to an offshore platform riser, said apparatus comprising:

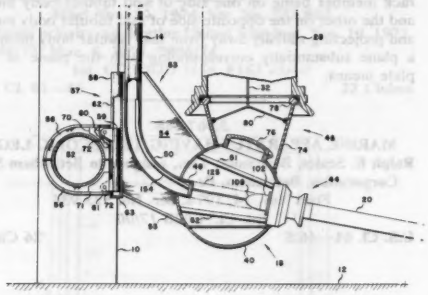
a riser having a seabed end;

a joint chamber enclosing a portion of the seabed end;

port means in said chamber for receiving a pipeline end for connection to said seabed end;

means for pulling an end of the pipeline into the chamber;

means for supporting said riser end and said chamber on the platform, said means including means providing for relative movement of the riser end and chamber with respect



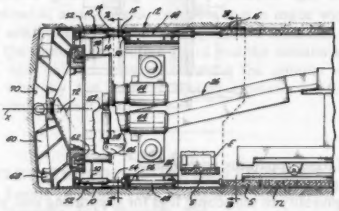
to the platform to accommodate service conditions; and access means in said chamber.

3,967,463

CONTINUOUS TUNNEL BORING MACHINE AND METHOD

Carlo Grandori, Rome, Italy, assignor to The Robbins Company, Seattle, Wash.

Filed Aug. 5, 1974, Ser. No. 494,390
Int. Cl.[2] E01G *3/02*
U.S. Cl. 61—85 5 Claims



1. In a tunneling machine comprising end-to-end front and rear tubular shields, said rear shield including a tail section which extends rearwardly and provides space under cover within which a tunnel lining is constructed, main thrust ram means interconnected between the front and rear shields, for shoving the front shield forwardly relative to the rear shield and for steering said front shield relative to said rear shield; auxiliary thrust rams mounted on said rear shield and extendable rearwardly to contact the tunnel lining, the improvement comprising:

said auxiliary thrust ram means comprising a plurality of groups of thrust rams, with each such group comprising circumferentially adjacent thrust rams in a continuous peripheral zone of the rear shield, extendable rearwardly in unison a distance at least slightly larger than the axial length of a tunnel lining segment;

said main thrust rams means being extendable rearwadly in unison a distance which is substantially $1/x$ of the stroke of the auxiliary thrust rams, where x is the number of groups of auxiliary thrust rams; and

said groups of auxiliary thrust rams being progressively offset an amount substantially equal to the stroke of said main thrust ram means,

whereby one group of the auxiliary thrust rams means can be retracted and tunnel lining installed between them and a previously installed portion of tunnel lining while the other groups of auxiliary thrust rams are extended against previously installed portions of the tunnel lining and the

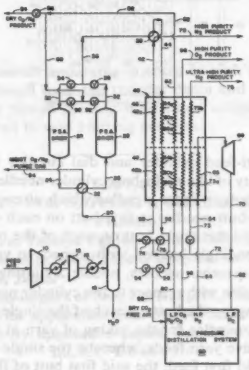
main thrust rams are being used for moving the front shield relative to the rear shield.

3,967,464

AIR SEPARATION PROCESS AND SYSTEM UTILIZING PRESSURE-SWING DRIERS

Thomas E. Cormier, Allentown, and William J. McAuley, Coopersburg, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed July 22, 1974, Ser. No. 490,639
Int. Cl.[2] F25J 3/02
U.S. Cl. 62—13 12 Claims



1. A cryogenic air separation process for increasing the recovery of gaseous product nitrogen from an air feed stream comprising the steps of:

a. drying a compressed feed air stream by passing said feed stream through a pressure-swing adsorption drier,

b. cooling said dried feed air stream and removing carbon dioxide from said dried feed air stream by passing said dried feed air stream through a reversing passage of a heat exchanger in countercurrent heat exchange with at least one product stream colder than said feed air stream,

c. separating said cooled feed air stream in a dual pressure distillation system including high and low pressure distillation columns to produce at least one low pressure product nitrogen stream, and at least one other low pressure stream,

d. passing at least a portion of said other low pressure stream through said pressure-swing adsorption drier so as to regenerate said adsorption drier at a pressure lower than that of said compressed feed air stream,

e. passing at least a portion of said product nitrogen stream through said reversing heat exchanger passage so as to regenerate said reversing heat exchanger passage by subliming said removed carbon dioxide, and

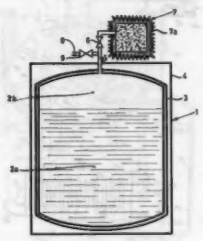
f. recovering said nitrogen stream after passage through said reversing heat exchanger passage as a product nitrogen stream having a nitrogen purity of at least 99.5%.

3,967,465

CONTAINER FOR STORING AND TRANSPORTING A LIQUEFIED GAS

George Albert Apolonia Asselman; Harmannus Hinderikus Van Mal, and Andries Mijnheer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1974, Ser. No. 483,613
Claims priority, application Netherlands, July 4, 1973, 7309295
Int. Cl.[2] F17C 11/00
U.S. Cl. 62—48 7 Claims



1. In a storage container for storing a liquefied gas, the container including a liquid space for containing said liquefied gas, and a gas space for containing vapor of said liquefied gas, the improvement in combination therewith comprising an auxiliary container external of said storage container, duct means for communicating said vapor between said containers, a material in said auxiliary container capable of adsorbing a portion of said gas with a resulting evolution of sorption heat, heat transfer means operable with said auxiliary container for dissipating said sorption heat.

3,967,466

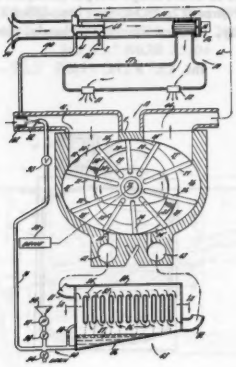
AIR CONDITIONING SYSTEM HAVING SUPER-SATURATION FOR REDUCED DRIVING REQUIREMENT

Thomas C. Edwards, Casselberry, Fla., assignor to The Rovac Corporation, Maitland, Fla.

Continuation-in-part of Ser. No. 465,841, May 1, 1974, Pat. No. 3,913,351. This application Mar. 17, 1975, Ser. No. 559,063
Int. Cl.[2] F25D 9/00
U.S. Cl. 62—402 30 Claims

1. In an air conditioning system, an air conditioning unit including a compressor and an expander having rotor means driven by a common shaft, the rotor means having vanes defining enclosed compartments which become smaller and larger as the shaft rotates, the compressor and expander each having an inlet port and an outlet port, a first heat exchanger connected between the compressor outlet port and the expander inlet port, a second heat exchanger coupled to the expander outlet port, the heat exchangers being isolated from one another, means for conducting to the compressor inlet port a gas which is non-condensing at the temperatures and pressures encountered in the unit so that upon driving of the rotor means the gas (1) is positively compressed and heated in the compressor, (2) releases heat in the first heat exchanger, (3) is positively expanded and cooled in the expander, and (4) absorbs heat in the second heat exchanger, an additive fluid in the gas in the form of a fluid having a high heat of vaporization capable of evaporation in the compressor and condensation in the expander, and means for injecting droplets of the additive fluid into the gas entering the compressor inlet port at a sufficient rate to super-saturate the gas for evaporation of the fluid by the heat of compression with the change of state partially counteracting the heating of the compressed gas and consequently reducing the work required to compress it, with at least a portion of the evaporated fluid being condensed in

the first heat exchanger, the gas flowing into the expander being at least substantially saturated with the additive fluid resulting in condensation in the expander to form particles with the change of state partially counteracting the cooling of



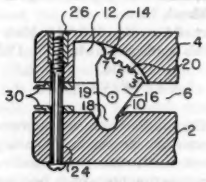
the expanding gas resulting in an increase in the work of expansion thereby further reducing the work required to drive the rotor, and means for disposing of the additive fluid condensed in the first heat exchanger.

3,967,467

MANUAL KNITTING FRAME

Clifford Leach, Sr., 1947 Woodglen Lane No. 1, Vacaville, Calif. 95688

Filed Mar. 3, 1975, Ser. No. 554,930
Int. Cl.² D04B *3/00*
U.S. Cl. 66—4 **3 Claims**



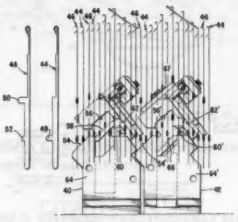
1. A manual knitting frame comprising two parallel elongated frame members, connecting means joining said frame members in such a manner as to leave an elongated slot between them, said members having upper surfaces defining a plane, a row of spaced pins on each frame member, said pins being of substantially uniform height and substantially perpendicular to said plane and said rows being parallel to said slot, the height of said pins being of the same order of magnitude as the spaces between them in the rows, said connecting means comprising variable spacing means holding said elongated members apart by any one of several fixed but selectable distances, such that the rows are spaced apart by a distance in the approximate range of twice the height of said pins to six times said height, said connecting means comprising clamping means urging said elongated members toward each other and at least one movable stitch selector holding said members apart, said stitch selector being journaled for partial rotation about an axis in one of said elongated members and having a curved edge spaced from said axis of rotation, said curved edge being provided with a series of notches, the bottoms of said notches lying on a curve eccentric to said axis of rotation, and a fixed detent on the other of said elongated members positioned to engage in any one of said notches.

3,967,468

CIRCULAR KNITTING MACHINE FOR PRODUCING INTERLOCK FABRIC

John Christopoulos, Charlotte, N.C., assignor to The Singer Company, New York, N.Y.

Filed Oct. 14, 1975, Ser. No. 621,927
Int. Cl.² D04B *9/08*
U.S. Cl. 66—20 **3 Claims**



1. In a multi-feed cylinder and dial circular knitting machine, a plurality of like multi-butt cylinder needles, a plurality of like single-butt cylinder needles which alternate in space with the multi-butt needles, a first butt on each of the multi-butt needles and the single butt on each of the other needles being correspondingly located with respect to yarn engaging ends of the respective needles, needle actuating cam means relatively movable with respect to the cylinder needles including a cam to engage the butt on each of the single-butt needles and raise such needles for the taking of yarn at the first of a pair of successive yarn feeds, whereby the single-butt needles may knit at said first feed, the said first butt of the multi-butt needles being shorter than the one butt of the single-butt needles such that said cam is missed by the shorter butts of the multi-butt needles and the multi-butt needles welt at said first yarn feed, said needle actuating cam means also including camming causing the multi-butt cylinder needles to knit at the second of the successive yarn feeds and the single-butt needles to welt at the second yarn feed, a plurality of like multi-butt dial needles aligned with the single-butt cylinder needles, a plurality of other like multi-butt dial needles, aligned with the multi-butt cylinder needles, and needle actuating dial camming relatively movable with respect to the dial needles for causing the dial needles aligned with the single-butt cylinder needles to welt at the first feed and knit at the second and for causing the dial needles aligned with the double-butt cylinder needles to knit at the first feed and welt at the second.

3,967,469

WARP KNITTING MACHINE WITH IMPROVED THREAD FEEDING APPARATUS

Phillip Hepperle, Jugesheim, Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany

Filed July 25, 1975, Ser. No. 599,310
Claims priority, application Germany, July 29, 1974, 2436452
Int. Cl.² D04B *23/06, 23/08, 23/10, 23/12*
U.S. Cl. 66—84 A **4 Claims**

1. A warp knitting machine having an improved thread feeding apparatus, said machine comprising:

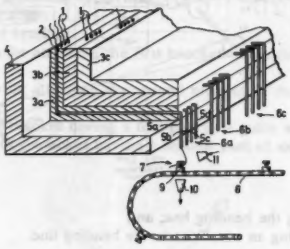
a source of threads;

a thread transfer chain, said chain having thread pick-up clamps attached thereto;

a thread feeding means for transferring the threads to the pick-up clamps of the thread transfer chain, said thread feeding means including a plurality of thread guides con-

nected together in groups, said groups being adapted to move in different planes parallel to one another;

a driving means for moving said groups of guides past each other without mutual interference; and,



a thread inserter apparatus oriented to pick up one end of a weft thread from the transfer chain and the other end from the thread feeding means and adapted to present said thread to said knitting machine.

3,967,470

APPARATUS FOR NAPPING A CIRCULAR KNITTED FABRIC

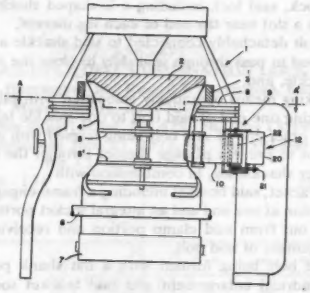
Toshiaki Miura; Tatsuya Ugajin, both of Aichi, and Masayoshi Inoue, Ichinomiya, all of Japan, assignors to Toray Textiles, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 428,371, Dec. 26, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 545,999

Claims priority, application Japan, Dec. 29, 1972, 48-1124

Int. Cl.[2] D04B *35/00*

U.S. Cl. 66—147 **8 Claims**



1. In an apparatus for napping a circular knitted fabric between the knitting portion and winding portion of a circular knitting machine, the combination which comprises means for stretching said fabric coursewise at a predetermined location, filament severing means positioned at said location and having emery in a beltlike form for severing filaments of said circular knitted fabric, said severing means including a supporting base for causing said emery to contact said circular knitted fabric, a supporting frame provided with yieldable means for yieldably supporting said supporting base, and driving means arranged to move said emery in a coursewise direction relative to said circular knitted fabric.

3,967,471

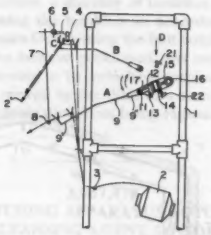
AUTOMATIC KNITTING YARN REPLACING APPARATUS

Fukuo Matsumoto, Heiwa, and Teizi Okada, Aichi, both of Japan, assignors to Toray Textiles Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 437,352, Jan. 28, 1974, abandoned. This application Aug. 12, 1975, Ser. No. 604,068

Int. Cl.[2] D04B *35/18*

U.S. Cl. 66—161 **7 Claims**



1. On a knitting machine having yarn engaging means which releases engaged yarn and stops the knitting machine when the yarn is subjected to abnormal tension, an improved automatic yarn replacing apparatus comprising at least one yarn receiving means disposed below the yarn engaging means under normal condition without contacting the yarn, and means (a) for moving said yarn receiving means upwardly when the yarn engaging means releases the yarn such that said yarn is captured and is brought into reengagement with said engaging means and returning said yarn receiving means downwardly after said reengagement is completed, and (b) for actuating yarn support elements of said yarn engaging means when the yarn receiving means is raised to a position that is suitable for said reengagement of the yarn with the engaging means.

3,967,472

STITCH BONDED FABRICS

Arno Edgar Wildeman, Aurel House, Blueberry Road, Altrincham, Chester, and David Brunnschweiler, 515 Preston New Road, Blackburn, Lancaster, both of England

Filed Dec. 10, 1973, Ser. No. 423,425

Claims priority, application United Kingdom, Dec. 16, 1972, 58206/72

Int. Cl.[2] D04B *7/12, 7/14, 9/14, 13/00*

U.S. Cl. 66—191 **18 Claims**

1. A method for producing a fleece fabric comprising the steps of:

a. consolidating a fleece into a primary fabric by fleece knitting said fleece with a first set of stitches formed solely from groups of fibers of said fleece; and

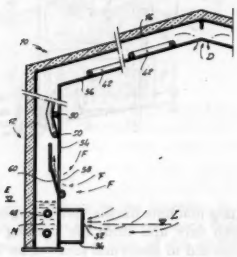
b. subsequently stitch bonding the primary fabric with a second independent set of stitches of warp yarn.

3,967,473

EQUIPMENT FOR SELECTIVE STEAM TREATMENT OF CONTINUOUS FABRIC PIECES

Roberto Arioli, 15, via Cristoforo Colombo; Ameda Arioli; Lorenza Arioli, both of 20, via Cristoforo Colombo, all of Gerenzano, Varese, and Carlo Rezzonica, 7, via Manetti, Saronno, Varese, all of Italy

Filed Apr. 17, 1974, Ser. No. 461,736
Claims priority, application Italy, Apr. 20, 1973, 23294/73
Int. Cl.² D06B 3/12
U.S. Cl. 68—5 D 9 Claims



4. Apparatus for steam-treating fabrics, particularly printed fabrics, comprising a steamer housing having a treatment chamber including a pair of spaced upstanding side walls, an open bottom portion, and an upper wall comprising a pair of V-shaped inclined wall portions which converge in direction away from said bottom portion; a steam inlet communicating with said chamber and being centrally located at the point of convergence of said inclined wall portions of said upper wall; means for conveying a fabric to be steamed through said chamber; means for generating steam at a first saturated temperature and for admitting the steam in a flow path towards said inlet and into said chamber so that any steam condensate droplets which are formed on said inclined wall portions of said upper wall slide downwardly towards said side walls; and means intermediate said steam-generating means and said steam inlet for selectively heating said saturated steam to a second over-heated temperature higher than said first temperature to permit the steam-treating of the fabric at different temperatures at the option of a user.

3,967,474

APPARATUS AND METHOD FOR MANUFACTURING LEATHER BEADING LINE AND THE NOVEL PRODUCT MADE THEREBY

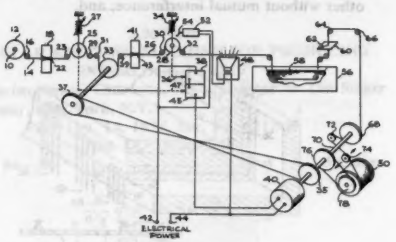
Hans Alexander Edwards, 2118 3rd St., Santa Monica, Calif. 90405

Filed May 19, 1975, Ser. No. 578,407
Int. Cl.² C14B 5/00
U.S. Cl. 69—21 14 Claims

1. The process for forming, from leather lacing of rectangular cross-section, beading line of smooth and uniform surface and consistent circular cross-section, including the steps of:

soaking the lacing in a liquid which is compatible with the lacing;

drawing the lacing through at least one forming die having an opening of predetermined shape and dimensions to form a leather beading line;



drying the beading line; and

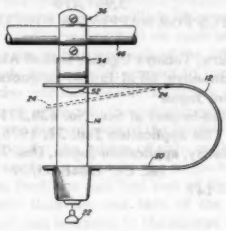
applying an emollient to the beading line.

3,967,475

COMBINATION BICYCLE LOCK AND MOUNTING BRACKET

Michael S. Zane, 85 Dean Road, Brookline, Mass. 02146

Filed Apr. 4, 1975, Ser. No. 565,131
Int. Cl.² E05B 73/00; B62J 7/00
U.S. Cl. 70—18 3 Claims



1. A bicycle locking system, comprising,

a. a lock, said lock including a U-shaped shackle formed with a slot near the end of each leg thereof,

b. a bolt detachably connected to said shackle and dimensioned to pass through said slots to close the end of said shackle, and,

c. locking means operatively associated with said lock for locking one end of said bolt to one shackle leg,

d. the other end of said bolt being formed with an enlargement to prevent passage thereof through the slot of the other shackle leg, in combination with

e. a bracket, said bracket including a frame-engaging clamp portion at one end and an integral socket portion extending out from said clamp portion and receiving the enlargement of said bolt,

f. said bolt being formed with a flat shank portion and cylindrical enlargement and said bracket socket being cylindrical,

g. said bracket being formed with thin flat tabs adjacent said socket and extending through the slot of the other shackle leg and lying flat against opposite sides of said shank.

3,967,476

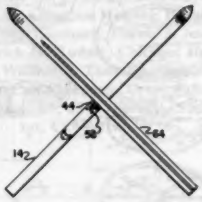
SKI LOCK

Robert A. Look, 8404 W. Mercer Way, Mercer Island, Wash. 98040

Filed Jan. 11, 1973, Ser. No. 322,906
Int. Cl.² E05B 73/00
U.S. Cl. 70—58 4 Claims

1. A locking apparatus for locking together a first member and a second member:

a. said first member being an elongated member having a length many times the thickness and many times the width;
b. said second member being an elongated member having a length many times the thickness and many times the width;
said locking apparatus comprising:
c. a first bracket;
d. a second bracket;
e. a means for attaching the first bracket to the first member;
f. a means for attaching the second bracket to the second member;
g. said first bracket having a first part of a guide means;
h. said second bracket having a second part of said guide means;



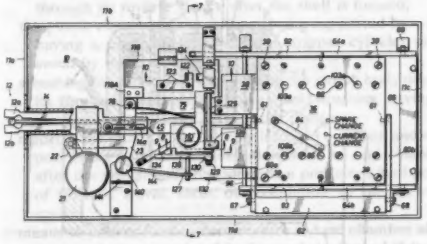
i. said first part and said second part may be moved relative to each other;
j. a releasable locking means integral with said brackets and for locking together said first bracket and said second bracket with the first member and the second member being crossed;
k. said first bracket having a first base having first opposed sides;
l. each of said first opposed sides bends back on itself to form a groove;
m. said second bracket having a second base having second opposed sides; and,
n. each of said second opposed sides bends to form a tongue for sliding into a respective said groove in said first bracket.

3,967,477

MULTIPLE DIAL COMBINATION LOCK

Richard P. Harrington, and Russell J. Harrington, both of P.O. Box 474, Mountainburg, Ark. 72946

Continuation-in-part of Ser. No. 479,168, June 13, 1974. This application June 27, 1975, Ser. No. 591,084
Int. Cl.² E05B *37/12, 37/14*
U.S. Cl. 70—131 **25 Claims**



1. A combination lock comprising a bolt, means for moving the bolt between a locked and an unlocked position, a gate plate, means mounting the plate for movement along a line perpendicular to the plate between a first position holding the bolt in its locked position and a second position allowing the bolt to be moved to its open position, a plurality of openings in the gate plate, a plurality of tumblers mounted for rotation in the openings, having exposed dials for positioning the tumblers in accordance with a combination, a fence carried by each tumbler and a gate intersecting each opening in the plate to receive the fence and allow the plate to move along the longitudinal axis of the tumblers only when all of the tumblers are positioned in accordance with the combination of the lock.

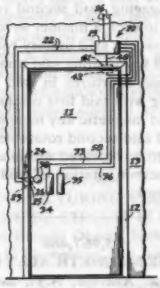
23. A combination lock comprising a bolt movable between a locked and an unlocked position, means for holding the bolt in the locked position, a plurality of tumblers having exposed dials for positioning the tumblers in accordance with a first combination, means for releasing the bolt holding means when the tumblers have been so positioned, and means for holding the bolt from moving to its unlocked position until the tumblers have been moved by the dials to a second combination to prevent the combination from being exposed while the lock is open.

3,967,478

DOOR LATCHING APPARATUS ACTUATED BY CLEANSING AGENT SENSOR

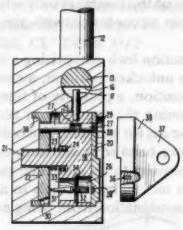
Stanley G. Guinn, 1005 Crown Point Road W., Signal Mountain, Tenn. 37377

Filed June 9, 1975, Ser. No. 585,323
Int. Cl.² E05B *47/04*
U.S. Cl. 70—144 **5 Claims**



1. An apparatus for latching and unlatching a door in a door frame, comprising:
a. an electromagnetic bolt mechanism adapted to latch said door to said door frame when said bolt mechanism, is de-energized and to unlatch said door from said door frame when said bolt mechanism is energized,
b. an electrical energy source for said electromagnetic bolt mechanism,
c. a pair of electrolytically dissimilar electrodes mounted in the vicinity of said door,
d. said electrodes being spaced apart a distance no greater than the length of the portion of a human limb coated with the electrolytic residue of a cleansing agent spanning and in contact with both said electrodes, whereby an electric current may be established between said electrodes and through said electrolytic residue,
e. electrical switch means connected to said electromagnetic bolt mechanism and to said energy source, and,
f. means for actuating said switch means to energize said bolt mechanism, when an electric current is established across said electrodes.

3,967,479
KEY LOCK
Jerome Vick, 801 Lake Charm Drive, Oviedo, Fla. 32765
Filed June 25, 1974, Ser. No. 482,997
Int. Cl.[2] E05B 47/00
U.S. Cl. 70—276 14 Claims

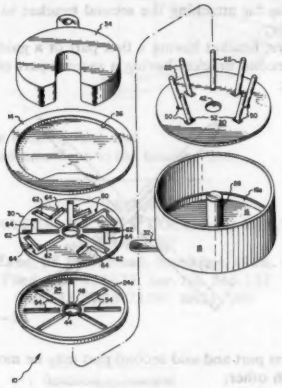


1. A magnetically actuatable lock assembly including a housing, first rotatable means in said housing, second rotatable means having front and rear walls, said front wall being in juxtaposition relative to said first rotatable means, overload release means joining said first and second rotatable means for concurrent rotation serving to prevent unauthorized lock operation, annular means including a plurality of apertures therein spaced from said rear wall, said last named means having further means complemental to means within said housing serving to cause reciprocation of said annular means upon rotation of said annular means, magnetic tumbler pin means associated with said second rotatable means, means drivingly associating said second rotatable means and said annular means for unitary rotary movement said tumbler means normally engaging said second rotatable means and said annular means in such a manner as to prevent said reciprocation and thus prevent said unitary rotary movement, and magnetic key means for aligning said tumbler pin means with at least some of said apertures in said annular means and drivably interlocking with said first rotatable means, whereby upon rotation of said magnetic key means said annular means will advance toward said second rotatable means to cause the tumbler pin means to be received within said apertures in said annular means to permit rotation of said annular means and unlatching of said lock.

3,967,480
ROTARY RELEASE MAGNETICALLY OPERATED LOCK
Wells F. Stackhouse, Ashville, N.Y., assignor to American Locker Company, Inc., Jamestown, N.Y.
Filed Mar. 19, 1975, Ser. No. 559,911
Int. Cl.[2] E05B 47/00
U.S. Cl. 70—276 10 Claims

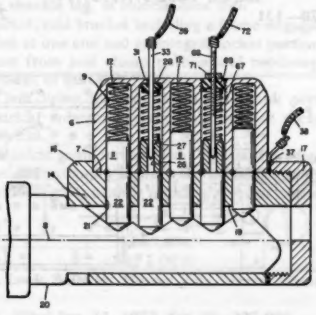
1. In a lock the combination comprising:

a plurality of magnetically attractable tumbler pins supported for pivotal movement one within each of a plurality of planes arranged to extend essentially radially of an axis whereby a portion of each of said tumbler pins may move back and forth along a path of travel disposed essentially radially of said axis, said portion being normally biased towards at least one rest position disposed along its path of travel while being movable into a lock combination setting position spaced from said rest position; a lock release assembly including a release plate supported for rotary movements about said axis between locked and lock release positions, said release plate having a plurality of composite slots each of which is arranged to movably receive said portion of one of said tumbler pins, each of said composite slots including a locking slot portion and an unlocking slot portion, said locking slot portion extending radially of said axis in alignment with said path of travel of said portion of its associated tumbler pin when said release plate is in said locked position and engaging with said portion of its associated tumbler pin in all positions thereof excepting said combination setting position to prevent rotation of said release plate from said locked position towards said lock release position, said unlocking slot portion extending transversely of and intersecting its associated locking slot portion at a position therealong in alignment with said portion of its associated tumbler pin when the latter is in its combination setting position; and



a key to be removably applied to said lock, said key having magnet devices corresponding in number to said tumbler pins and arranged within said key to attract said tumbler pins to effect movement of said portions thereof along their respective paths of travel from their rest positions into their combination setting positions when said key is applied to said lock, thereby to position said portions of said tumbler pins in alignment with their associated unlocking slot portions and free said release plate for rotation towards said lock release position.

3,967,481
DETECTOR CYLINDER
Ernest L. Schlage, San Mateo, Calif., assignor to Schlage Lock Company, San Francisco, Calif.
Filed Dec. 30, 1974, Ser. No. 537,560
Int. Cl.[2] E05B 17/00
U.S. Cl. 70—431 10 Claims



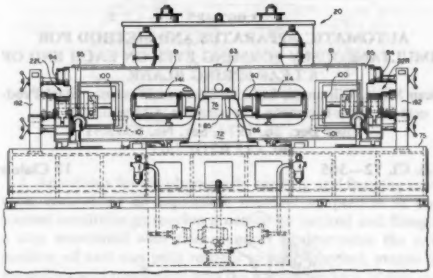
1. A detector cylinder comprising a cylinder body having a plug bore therein extending along an axis, means defining a pin bore in said body opening into said plug bore, a plug

rotatable in said plug bore, means defining a keyway in said plug, means defining a pin opening in said plug communicating with said keyway and in one rotated position of said plug in said plug bore registering with said pin bore, a first pin slidable in said pin bore and said pin opening, a second pin laterally shiftable and slidable in said pin bore and said pin opening, a spring engaging said second pin and urging said second pin and said first pin toward said plug bore, an electrical contact in said pin bore and spaced laterally of said second pin, and means for establishing an electrical circuit through said electrical contact and said second pin when said second pin is moved laterally in said pin bore into abutment with said electrical contact.

3,967,482
PRODUCTION OF CLOSED BOTTOM SHELLS

Edward F. Kubacki, Arlington Heights; Bengt S. Backe, Dundee; Vance B. Gold, Lombard; Harold J. Jessogne, Arlington Heights; Frederick G. Kudert, Chicago; Harold C. Lemke, Grayslake, and William D. Timmins, Elgin, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 17, 1975, Ser. No. 559,400
Int. Cl.² B21D *22/28*
U.S. Cl. 72—7 **96 Claims**



1. In a machine of the kind described having punch and die means cooperating at a forming station to develop the shell of a can from a blank:

a reciprocal punch body of tube form and a stripper inside the punch body together presenting independent, supplementary punch elements engageable with the blank during a forward stroke of the punch body to move the blank through the die means incidental to forming the shell;

means to advance the punch body and stripper through a forward stroke predetermined as sufficient to complete formation of the shell and to retract the punch body through its reverse stroke after the shell is formed;

the punch element of the stripper being supported by a rod having a piston located within a stripper cylinder presented by the punch body;

a bushing for supporting and guiding the punch body during its forward and reverse strokes, said bushing having a chamber for receiving fluid under pressure;

a port in the punch body opening into said cylinder, and said port being continuously communicated to said chamber after the punch body has attained a predetermined point of forward travel, short of completion of the forward stroke;

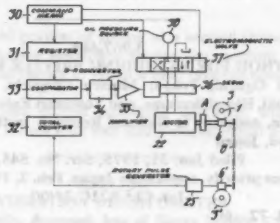
means to deliver fluid under pressure to said chamber after the punch has completed its forward stroke and thereafter to reverse the punch body which retracts while the stripper remains engaged with the bottom of the shell thereby to strip the shell from the punch body;

and means to retract the stripper after the shell has been stripped.

3,967,483
DEVICE FOR ADJUSTING A PRELOAD AND ADDITIONALLY COMPENSATING THE SLIDE IN A PRESS

Moritaka Kuroyahagi, Machida; Yoshinobu Kimura, Chiryu; Hirotoku Takeuchi, and Masao Takegami, both of Aichi, all of Japan, assignors to Aida Engineering Kabushiki Kaisha and Zaidan Hojin Kikai Shinko Kyokai, Tokyo, both of, Japan

Filed Aug. 13, 1974, Ser. No. 496,995
Claims priority, application Japan, Aug. 18, 1973, 48-92088
Int. Cl.² B21J *9/20*
U.S. Cl. 72—21 **3 Claims**

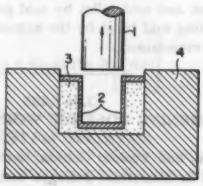


1. A device for providing a preload to be applied by the slide in a press and additionally compensating for any deformation of the slide, comprising: a worm mechanism having a worm shaft for moving the vertical position of a die on said slide; an oil pressure motor for driving said worm mechanism through a torque limiter; and a rotary pulse generator with its rotation imparted from the worm shaft of said worm mechanism; the rotation of said oil pressure motor being controlled by a servo valve adapted to be actuated at a value obtainable from the comparison between a pulse amount generated from said rotary pulse generator and a pulse amount corresponding to a predetermined slide deformation compensating amount and by an electromagnetic valve adapted to control the rotation direction of said motor.

3,967,484
METHOD OF MANUFACTURING A LOW ENERGY-LOSS WAVEGUIDE CIRCUIT ELEMENT

Soji Takahashi, and Hiroshi Okada, both of Kodaira, Japan, assignors to Hitachi Electronics, Ltd. and Hitachi, Ltd., both of, Japan

Continuation-in-part of Ser. No. 327,160, Jan. 26, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,474
Claims priority, application Japan, Jan. 26, 1972, 47-9098
Int. Cl.² B21C *23/22, 23/18;* **H01P** *11/00*
U.S. Cl. 72—47 **6 Claims**



1. A method of manufacturing a low-energy loss waveguide circuit element comprising the steps of:

joining a low resistivity metal film to a base metal structure, wherein the ratio of flow stress of said metal film to flow stress of said base metal is not larger than 1.5, and

forming a conductive internal surface inside a recessed portion within said base metal by

pressing a male die of a predetermined shape into said base metal through said low resistivity metal film by

cold processing at a low processing speed of not higher than 1 mm/sec and an area reduction rate of not larger than 70 percent so as to cause a plastic strain in the base metal, said recessed portion being formed with a thick side wall, said internal surface being formed of a uniform thin layer formed of said low resistivity metal film and said internal surface being formed with a surface finish wherein the difference in height between the highest and lowest portions of said surface is not more than 0.2 μm such that said internal surface of said recessed portion constitutes a conductive surface for transmission of electric waves.

3,967,485

METHOD FOR EXTRUDING BRITTLE MATERIALS

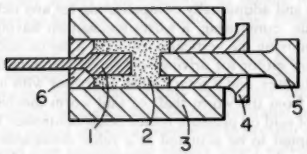
Atsushi Oguchi, Tokyo; Minoru Otaguchi, Hino; Minoru Nobuki, Higashikurume, and Yoshinari Kaieda, Tokyo, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jan. 31, 1975, Ser. No. 545,875

Claims priority, application Japan, Feb. 2, 1974, 49-13306

Int. Cl.² B21C *23/00*

U.S. Cl. 72—60 **12 Claims**



1. A method for extruding a billet consisting of at least one material selected from the group consisting of metals, alloys, intermetallic compounds, ferrites and ceramics using an extruder including an extrusion die, an extrusion plunger and a container adapted to load the billet therein and extrude it therefrom, thereby to shape the billet to the configuration of the extrusion die; characterized in that said extruder further includes means for pressurizing said material loaded in the container as enclosed therein, and said method comprises embedding said billet, made in a smaller dimension in all directions than the dimension of the internal space of said container, in a solid pressure transmitting medium made of a material capable of being plastically deformed by the pressure exerted by said pressurizing means and having the configuration and dimension fitting to those of the internal space of said container, loading said pressure transmitting medium and said billet into the container, pressurizing said pressure transmitting medium and said billet by said pressurizing means, and then extruding said billet by the extrusion plunger while said pressure is maintained.

3,967,486

TOUGHENING ROLL DIE WORK METHOD FOR METALLIC MATERIAL

Seiji Takase, and Yoshiki Oshida, both of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1974, Ser. No. 537,829

Claims priority, application Japan, Jan. 18, 1974, 49-8366

Int. Cl.² B21B *9/00*

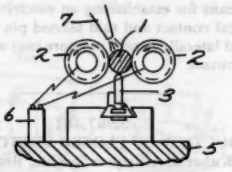
U.S. Cl. 72—69 **1 Claim**

1. A method for toughening a work piece made of a metal having at least one transformation point, by roll die working the workpiece, comprising:

a. heating the workpiece to the proximity of a transformation point;

b. subjecting the workpiece to roll die working with sufficiently low stress on the work piece as to permit the generation of super-plastic phenomena, while

c. generating super-plastic phenomena in the workpiece by alternately



i. heating the workpiece to surpass said at least one transformation point by up to 100°C, and

ii. cooling the workpiece to below said at least one transformation point by up to 100°C,

at frequency of alternation of about 4–5 cycles per minute.

3,967,487

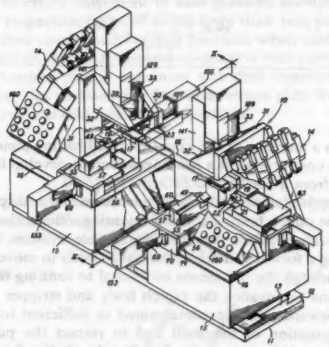
AUTOMATIC APPARATUS AND METHOD FOR SIMULTANEOUSLY FORMING EYES ON EACH END OF A LEAF SPRING BLANK

Dean Stout, Winamac, Ind., assignor to Winamac Steel Products Division McIntosh Corporation, Chicago, Ill.

Filed Dec. 26, 1974, Ser. No. 536,651

Int. Cl.² B21D *7/03*

U.S. Cl. 72—305 **12 Claims**



1. A method of simultaneously forming eyes at each end of a leaf spring blank comprising:

uniformly heating the spring blank to a predetermined uniform working temperature for the length thereof,

passing the heated blank transversely of its length into a working position,

clamping the opposite end portions of the blank in the working position to individual longitudinally spaced anvils,

simultaneously advancing forms beneath each end portion of the blank transversely of the blank into alignment with the underside of the blank,

vertically knocking down the ends of the blank about forms, then in an additional forming operation forming the end portions of the blank about the forms inwardly toward each other longitudinally of the blank and at the same time scarfing the ends of the blank as formed to conform

to the bottom surface of the blank upon completion of the eye forming operation,

simultaneously withdrawing the forms,

continuing the forming of the ends of the blank after the withdrawing and scarfing operation to the form of final eyes by movement of forming dies longitudinally towards the partially formed ends of the blank and moving the partially formed ends of the blank about a stationary forming surface all in a simultaneous operation at both ends of the blank and then unclamping the blank and passing the completed blank laterally of the anvils for quenching.

3,967,488

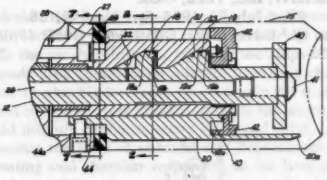
NECKERFLANGER FOR METAL CANS

Richard J. Hasselbeck, Houston, and Clarence E. Stiver, Sidney, both of Ohio, assignors to The Stolle Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 449,728, March 11, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,571

Int. Cl.² B21D *22/00*

U.S. Cl. 72—355 **6 Claims**



1. Apparatus for simultaneously necking and flanging metal cans, comprising an expansible mandrel adapted in its contracted condition to receive a can to be necked and flanged, a stop associated with said mandrel to determine the axial position of said can with respect to said mandrel, means for expanding said mandrel to grip the interior surface of said can, said mandrel having an annular groove in the region to be necked, and an elastic material in said groove, means for rotating said mandrel, and a rotatable die ring having an inner annular die surface coplanar with said groove, said die ring being larger in diameter than said mandrel to permit a can to be placed on said mandrel and removed therefrom without interference when said die ring is coaxial with said mandrel, and means to move said die ring radially to bring said inner annular die surface into coating relation with said annular groove, to neck and flange a can held on said mandrel simultaneously.

3,967,489

METHOD OF FORMING CONSTRICTION IN TUBING

Walter John Pohl, Anchorage, and Roy W. Abbott, Louisville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 15, 1975, Ser. No. 577,710

Int. Cl.² B21B *51/16*

U.S. Cl. 72—367 **2 Claims**

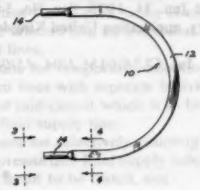
1. The method of forming a capillary tube for connection into a refrigeration system which comprises:

forming a length of tubing longitudinally into a preselected configuration so that the free ends thereof are arranged to connect with said refrigeration system, including at least one portion intermediate said ends being in a single plane;

placing said portion of said tubing intermediate said free ends in a forming means;

connecting at least one of said free ends to a source of constant pressure through a control means having means for measuring said pressure passing through said tubing;

squeezing said portion of the tubing in the forming means at a first speed until the tubing reaches an intermediate predetermined restriction; then



squeezing said portion of tubing at a second slower speed until the tubing restriction causes the medium passing through said tubing to reach a final predetermined pressure; and

terminating said second squeezing operation when said measuring means indicates said predetermined pressure.

3,967,490

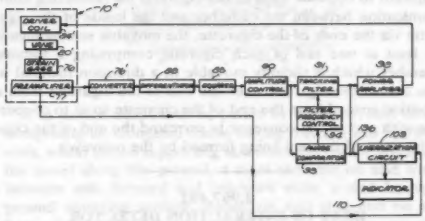
VIBRATION DENSITOMETER

Edward R. Brady, deceased, late of Sierra Madre, Calif. (by Barbara Jean Brady, executrix), assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 27, 1975, Ser. No. 590,964

Int. Cl.² G01N *9/00*

U.S. Cl. 73—32 A **5 Claims**



1. A vibration densitometer comprising: a structure mounted for immersion in a fluid; a strain gage bonded to said structure; first means connected from said strain gage to vibrate said structure at its resonant frequency f; second means connected from said first means for producing an output signal at said resonant frequency; and third means connected from said strain gage and said second means for producing an output directly proportional to the density d of said fluid where

$$d = \left[\left(\frac{A}{f}\right)(1 + K\alpha_t \Delta T)^3 + B\right]\left[f(x)\right],$$

A and B are calibration constants,

K is one of the numbers + 1 and − 1,

α_t is the temperature coefficient of the resonant period, where the resonant period is defined as the reciprocal of the resonant frequency,

ΔT is the change in the temperature of said fluid from a predetermined reference temperature,

$f(x)$ is one of two functions, one of said functions being a constant, the other of said functions being $f(\Delta T)$ where

$F(\Delta T) = 1 - \alpha_d \Delta T$

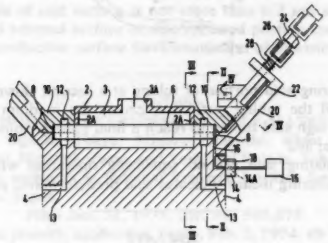
and

α_d is the temperature coefficient of the volume of said fluid.

3,967,491
CIGARETTE TESTING APPARATUS WITH INCLINED SLIDABLE SEALING MEANS

Edward G. Preston, London, England, assignor to Molins Limited, United Kingdom

Filed Jan. 31, 1975, Ser. No. 546,071
Claims priority, application United Kingdom, Jan. 31, 1974, 4464/74
Int. Cl.² G01M 3/04, 15/08
U.S. Cl. 73—41 5 Claims

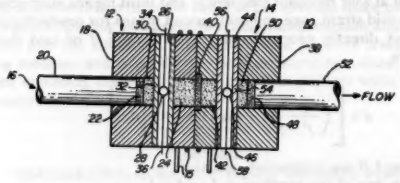


1. A device for testing the wrappers of cigarettes for leaks by producing a pressure differential between the inside and outside of each cigarette during testing, including a conveyor for carrying cigarettes during testing, a stationary member adjacent to the conveyor arranged to define, together with the conveyor, a chamber extending around each cigarette during testing, and movable sealing means carried by the conveyor adjacent to opposite ends of the cigarette for restricting communication between the chamber and the inside of the cigarette via the ends of the cigarette, the movable sealing means at least at one end of each cigarette comprising a slidable member which is slidably movable in a direction inclined to the axis of the cigarette over the end of the cigarette from a position spaced from the end of the cigarette so as to cooperate with part of the conveyor to surround the end of the cigarette, part of the seal being formed by the conveyor.

3,967,492
HEAT OF INTERACTION DETECTOR

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed May 9, 1972, Ser. No. 251,712
Int. Cl.² G01K 17/00; G01N 31/06
U.S. Cl. 73—61.1 C 22 Claims



1. A method of reducing the flow-rate-dependent temperature error of a heat of interaction detector, comprising the steps of:

causing a fluid to flow through said heat of interaction detector;

varying the rate of flow of the fluid through said heat of interaction detector;

detecting the rate of change of the flow-rate-dependent temperature error with respect to the rate of change of the flow of fluid through the heat of interaction detector; and

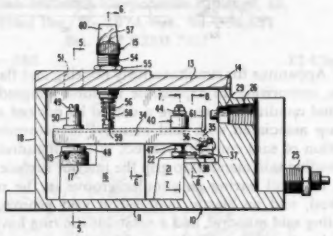
adjusting the flow of heat through the heat of interaction detector until the flow-rate-dependent temperature error is at a relatively low level;

the step of adjusting the flow of heat through the heat of interaction detector including the step of adjusting the flow of heat until the factors that caused flow-rate-dependent increases are substantially balanced against the factors that caused flow-rate-dependent temperature decreases with the same magnitude of change in the flow rate of the fluid and the step of adjusting the temperature of the fluid entering the heat of interaction detector with respect to the temperature of the body of the heat of interaction detector while the rate of flow is varied and the rate of change of the flow-rate-dependent temperature error is detected until the flow-rate-dependent temperature error is relatively low.

3,967,493
ACCELERATION SENSING MECHANISM

Frank W. Murphy, Jr., Tulsa, and Teddy Howard Cruse, Broken Arrow, both of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed July 25, 1975, Ser. No. 599,138
Int. Cl.² G01P 15/02; G05B 9/00; G05D 19/00
U.S. Cl. 73—71 7 Claims



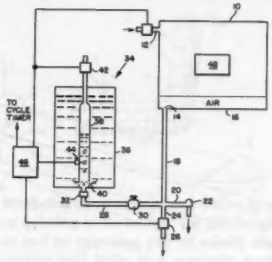
1. An acceleration sensing device comprising a body portion attachable to a device which is subject to acceleration forces and having a mechanism chamber and a cover plate for such chamber, a control fluid vent valve secured to the body portion within said chamber, control fluid passage means leading to said vent valve and formed in said body portion, a control lever arm within said chamber in opposing relation to the vent valve, means pivoting one end of the lever arm to the body portion near and on one side of the vent valve, an axially adjustable spring-biased vent valve closure stem on said control arm in opposing relation to the vent valve and having a compressible rubber-like closure disc on one end thereof adapted to engage and seal the control fluid vent port of said valve when said lever arm is in a latched position, a permanent magnet latching element fixed to the body portion near the end of the lever arm remote from said pivot means, a latching armature carried by the lever arm in opposed relation to said magnet latching element, a sensitivity adjustment means for said lever arm coupled with said armature and being accessible from the exterior of said device through an access opening in said cover plate, a manual lever arm reset and visual indicator assembly on said cover plate in opposing relation to the pivoted lever arm and including a plunger component which is resiliently biased into contact with a side of the lever arm remote from the magnet element, and a remote reset means for the lever arm responsive to fluid pressure from a remote source and mounted on said body portion.

3,967,494

METHOD AND APPARATUS FOR DETECTING ENTRAPPED AIR IN A STEAM STERILIZER

Larry James Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 28, 1975, Ser. No. 553,974
Int. Cl.[2] A61L 1/00, 3/02; G01N 7/14
U.S. Cl. 73—29 8 Claims



1. Method for detecting entrapped air in a steam sterilizer wherein steam is introduced into a sterilizing chamber to displace the air therefrom, comprising the steps of:

a. conducting an air-steam mixture from said chamber and into a water displacement tube wherein the steam component of said mixture condenses while the air entrapped in said mixture displaces water from said tube;

b. sensing the level of water in said displacement tube;

c. venting said chamber responsive to the level of water in said tube falling below a predetermined level; and

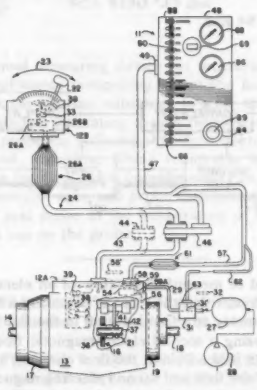
d. venting air from said tube to permit refilling of said tube with water.

3,967,495

INSTRUMENT FOR TESTING A PNEUMATIC CONTROL SYSTEM OF A VEHICLE TRANSMISSION

Michael D. Wesner, Peoria, and Harold J. Nauman, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 3, 1975, Ser. No. 554,935
Int. Cl.[2] G01M 13/02
U.S. Cl. 73—118 8 Claims



1. Apparatus for testing a pneumatic circuit that has a pressurized fluid supply and a plurality of fluid flow paths which are individually pressurized from said supply in predetermined combinations to control a plurality of pneumatic devices in a transmission, comprising:

a test pressure conduit,

pressure sensing means for indicating the presence or absence of a predetermined degree of pressure in said test conduit,

a plurality of pneumatic signal lines,

a plurality of test valves each being coupled between said test pressure conduit and an individual one of said pneumatic signal lines,

connector means for temporarily coupling individual ones of said signal lines with separate individual ones of said flow paths of said circuit which is to be tested,

a pressurized fluid supply line,

connector means for selectively coupling said fluid supply line to said pressurized fluid supply independently of said pneumatic circuit to be tested, and

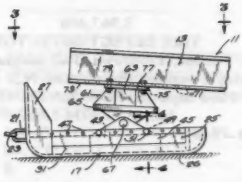
a pressure test valve connected between said fluid supply line and said test pressure conduit whereby said testing apparatus may be operated to selectively pressurize ones of said pneumatic signal lines.

3,967,496

TRACTOR PULL SLED

Lloyd A. Luedtke, P. O. Box 123, Allenton, Wis. 53002

Filed Mar. 13, 1975, Ser. No. 557,916
Int. Cl.[2] G01L 5/13
U.S. Cl. 73—141 R 9 Claims



1. A device adapted to be pulled by a tractor, said device comprising an elongated frame having forward and rearward ends, wheel means supporting said rearward end of said frame for travel along the ground, a mass movable on said frame between said forward and rearward ends, a sled having a ground engaging surface, means on said sled and on said forward end of said frame for adjustable connection therebetween in the direction between said forward and rearward ends, said connection means comprising a way on one of said sled and said forward end of said frame extending in the direction between said forward and rearward ends, an element connected to the other of said sled and said forward end of same frame and movably located on said way, and means releasably and adjustably locating said element on said way, and means on said sled adapted for attachment to the tractor for pulling of the device by the tractor along the ground.

3,967,497

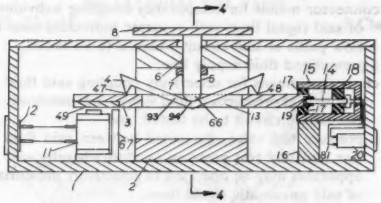
VIBRATING FORCE SENSOR

Horace D. Brown, 9817 SW. 93rd Terrace, Miami, Fla. 33176

Filed Dec. 16, 1974, Ser. No. 533,345
Int. Cl.[2] G01L 1/10
U.S. Cl. 73—141 R 1 Claim

1. A force measuring mechanism comprising: support means, a vibrator means pivotably secured relative to said support means to vibrate about an axis normal to its longitudinal axis and having an elongated slot centered in and transversing its longitudinal axis, a vibrator exciter means secured relative to said support means in space relation to said vibrator means, a transducer means secured relative to said support means in space relation to said vibrator means, said transducer means being responsive to the oscillating movements of said vibrator means to produce an electric signal, force bearing means comprising a post or the like, a yoke interposed be-

tween said post and said vibrator straddling said slot and engaging said vibrator at equal and opposite points about said slot, said yoke being underslung through its longitudinal center to pass through said slot and having a bearing surface



which coincides in space with said longitudinal axis, said post engaging said bearing surface to bring to bear a force upon said vibrator via said yoke to dampen the vibrating motions of said vibrator.

3,967,498

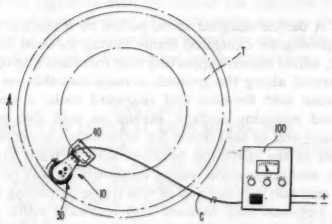
TIRE DEFECT DETECTOR

Rinaldo F. Pezzillo, Levittown, Pa., assignor to Super Tire Engineering Company, Pennsauken, N.J.

Filed Sept. 16, 1975, Ser. No. 613,970

Int. Cl.² G01M 17/02

U.S. Cl. 73—146 **18 Claims**



1. Apparatus for detecting the presence and location of variations in the density of material having a substantially smooth exterior surface, said apparatus comprising:

a. a roller for engaging the surface of said material;

b. an axle supporting said roller;

c. side frame means supporting said axle;

d. impact hammer means supported on said side frame means;

e. means for causing said impact hammer means to strike and shock said side frame means, axle, and roller;

f. transducer means mounted adjacent said roller and adapted to be energized by sound waves produced by the roller when shocked and to generate electrical signals in response thereto; and

g. electronic circuit means, including comparator means, for detecting differences in said generated electrical signals caused by differences in sound waves for producing an indicator signal in response to differences of a predetermined magnitude.

3,967,499

MEASURING RATE-OF-TURN ON BOARD OF SHIPS

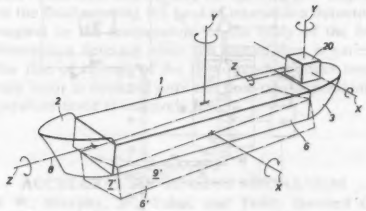
Sydney L. Whipps, Doddinghurst, England, assignor to Shell Oil Company, Houston, Tex.

Filed June 26, 1975, Ser. No. 590,790

Claims priority, application United Kingdom, July 19, 1974, 32094/74

Int. Cl.² G01C 21/00

U.S. Cl. 73—178 R **9 Claims**



1. An apparatus for measuring the rate-of-turn of a ship comprising:

a rate-of-turn sensor, said sensor being mounted in a fixed position relative to the ship's structure with its response axis parallel to the vertical axis of the ship and generating a signal representative of the rate-of-turn of the ship,

a rate-of-turn display, said display including means for calibrating the display as a 30°/minute full scale range instrument; and

means for feeding the signal from the sensor to the display.

3,967,500

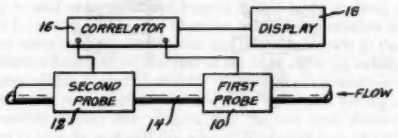
MAGNETIC TRANSIT-TIME FLOWMETER

George A. Forster, Westmont, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 29, 1975, Ser. No. 581,607

Int. Cl.² G01F 1/58

U.S. Cl. 73—194 EM **8 Claims**



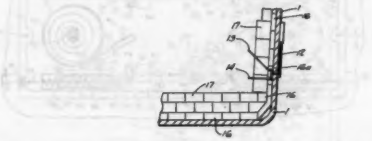
7. A method of measuring the flow of an electrically conducting fluid comprising the steps of disposing a first electromagnetic flowmeter at a first location in the fluid in the flow channel; disposing a second electromagnetic flowmeter at a second location in the fluid in the flow channel; and coupling the outputs of the first and second electrogmagnetic flowmeters to a statistical correlator to determine the time delay between the a-c portions of the signals from the first and second electromagnetic flowmeters that produces maximum correlation between the two signals, which time delay is a measure of the time taken by fluid to flow between the first and second electromagnetic flowmeters.

3,967,501

SLAG LEVEL DETECTION SYSTEM

Thomas R. Dishun, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed June 19, 1974, Ser. No. 480,614
Int. Cl.² G01F 23/26
U.S. Cl. 73—304 C 14 Claims



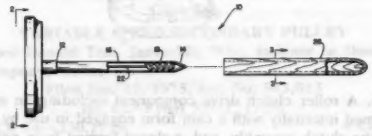
1. In a slag level detection system, a bottom pouring ladle having a teening opening in its bottom for discharging molten metal therefrom and an opposing pair of axially aligned trunnions for suspending said ladle in a normally vertically disposed position, the vertical axis of the ladle intersecting the axis of the trunnions, said ladle being tiltable about the axis of its trunnions from its normally vertical position, probe means mounted in the wall of the ladle beneath said trunnions, said probe means lying in the plane defined by the axis of said trunnions and the vertical axis of the ladle, whereby said probe means is positioned to accurately detect the level of molten metal in the ladle irrespective of whether the ladle is in its normally vertical position or in a tilted position.

3,967,502

THERMO TIMER

John D. Moran, 1014 W. 15th St., Hazelton, Pa. 18201

Filed Sept. 6, 1974, Ser. No. 503,656
Int. Cl.² G01K 1/16
U.S. Cl. 73—352 7 Claims



1. A thermal measuring device for measuring the heating time of a substance comprising a metallic heat conducting probe insertable into said substance to sense the temperature of said substance, indicating means responsive to said heat conducting probe for indicating the heat content of the substance sensed, and close fitting removable heat insulating jacket means having a shape complimentary to the probe and slidably mountable over said probe to substantially delay the response of said probe to the temperature of said substance for selective use on the probe.

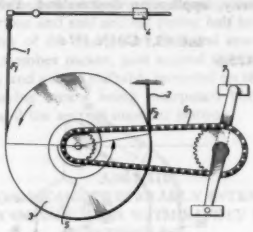
3,967,503

MEASURING BAND BRAKE DEVICE

Arne Bejert Svensson, Smyckegrand 14, 126 41 Hagersten, Sweden

Filed Oct. 9, 1974, Ser. No. 513,437
Int. Cl.² G01L 5/02; A63B 23/04
U.S. Cl. 73—379 2 Claims

1. In a measuring band brake device intended for attaining a defined braking action, a frame, a braking drum mounted on said frame, a braking band having two ends and surrounding said drum at an encircling angle ϕ, the improvment comprising: means for applying an outmeasuring force at one end of the braking band, the other end of the band being affixed to said frame, means allowing movement of at least one end of the braking band, and means to drive the braking drum by a human being in order to out-measure the force exerted by said human being, the braking band surrounding the brake drum



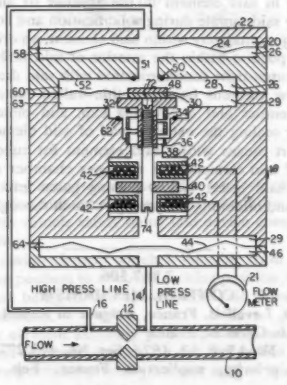
through more than one turn of the drum at an encircling angle ϕ at which the force at the affixed end of the band is negligible thus enabling the force exerted by the human being to be defined solely by the outmeasuring force applied at one end of the braking band.

3,967,504

DIFFERENTIAL PRESSURE TRANSMITTER WITH LOW SIDE OVERRANGE PROTECTION

Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 3, 1975, Ser. No. 564,689
Int. Cl.² G01L 7/08, 9/10
U.S. Cl. 73—407 R 10 Claims



1. An improved differential pressure transmitter for indicating the difference in pressure between high and low pressure process fluid lines, of the type having a body containing a sensing diaphragm with high and low pressure faces subjected to the pressures in the high and low pressure lines respectively and a first spring affixed at one end to the body and having a free end cooperating with the low pressure face to oppose motion thereof, wherein the improvement comprises:

a central hub mounted on the low pressure face and releasably biased against the free end of the first spring for motion separate therefrom in response to conditions of low side overrange.

3,967,505
METHOD AND MEANS FOR DRAWING SAMPLES FROM MELTS

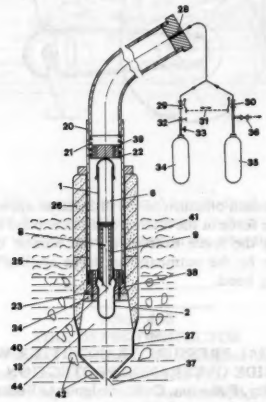
Heinrich Feichtinger, Schaffhausen, Switzerland, assignor to Leybold-Heraeus-Verwaltung G.m.b.H., Cologne, Germany

Filed Feb. 27, 1974, Ser. No. 446,279

Claims priority, application Switzerland, Feb. 28, 1973, 2875/73

Int. Cl.² G01N *1/14*

U.S. Cl. 73—425.6 **11 Claims**



1. An arrangement for drawing a sample from melts comprising, in combination, a tube-shaped evacuated hollow element capable of being heated to a temperature sufficient to degass said element during evacuation, the drawn sample solidifying in said element in the absence of air; the gases emitted by said sample during solidification and cooling being collected quantitatively within said element; an orifice-shaped narrowed portion within the interior of said hollow element and in vacuum-tight communication with said drawn sample, said hollow element having a thin-walled metallic sleeve-shaped member and a covering cap; and metallic sealing means for sealing the exterior wall of said element vacuum tight; insert means within said element for subdividing the interior of said element into an upper chamber and a lower chamber, said insert means passing gases into said upper chamber and inhibiting the passage of melt through said insert means.

3,967,506
CONTROL MECHANISM

Jean Billot, Levallois, France, assignor to Rafaut & Cie, Villeneuve-la-Garenne, France

Filed Feb. 13, 1974, Ser. No. 442,277

Claims priority, application France, Feb. 26, 1973, 73.06671

Int. Cl.² F16H *27/02*; F41F *5/00*

U.S. Cl. 74—2 **9 Claims**

1. In a missile adapted to be carried by an aircraft and having a traction cable extending from the missile to the aircraft, a control mechanism for tripping a system in the missile the control mechanism comprising:

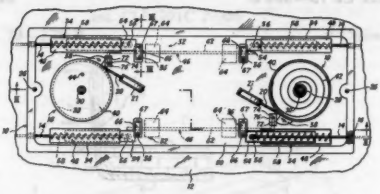
a. a storage pulley on which the traction cable is wound,

b. a trip control element for tripping a system of the missile,

c. energy storage means for actuating said trip control element upon release of the energy in said energy storage means,

d. a locking member movable between a locking position, in which it holds said energy storage means in an energy storing condition, and a release position, in which it permits said energy storage means to actuate said trip control element, and

e. movable means responsive to substantially complete unwinding of the traction cable from said storage pulley



for moving said locking member from its locking position to its release position, whereupon said energy storage means actuates said trip control element to trip the system in the missile.

3,967,507
ROLLER CLUTCH DRIVE COMPONENT

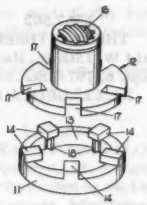
Desmond John Emms, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Mar. 13, 1975, Ser. No. 558,161

Claims priority, application United Kingdom, Mar. 29, 1974, 14197/74

Int. Cl.² F02N *11/02*; F16D *41/06*

U.S. Cl. 74—6 **3 Claims**



1. A roller clutch drive component including an annulus formed internally with a cam form engaged in use by rollers of the clutch assembly, and, a sleeve formed from non-magnetic material the sleeve having internal splines thereon, said annulus and said sleeve being positioned with their axes coextensive and the sleeve including an integral flange which is apertured, the apertures of the flange receiving projections integral with and extending axially from the annulus, so as to interconnect the annulus and the sleeve for rotation as one, and the annulus including a plurality of circumferentially spaced integral spring abutment portions, each spring abutment portion projecting radially inwardly from the inner periphery of the annulus and extending axially of the annulus in alignment with a respective one of said integral projections of the annulus.

3,967,508
LINE PRINTER WITH ESCAPE MECHANISM DRIVING MEANS

Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Filed Apr. 25, 1975, Ser. No. 571,617

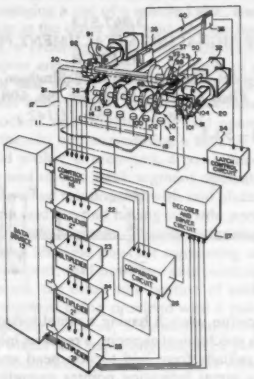
Int. Cl.² F16H *27/02*

U.S. Cl. 74—128 **9 Claims**

1. A drive mechanism for rotating a shaft mounted on a frame about an axis of rotation in a first direction, said mechanism comprising:

A. a solenoid assembly mounted to the frame and including an armature which has first and second positions along a second axis which is normal to the axis of rotation and which intersects it,

B. a single escapement arm mounted to said solenoid armature and pivoted in the frame for rotation on a third axis parallel to the axis of rotation and spaced from the second axis, said arm including a drive member and a positioning member, and



C. a ratchet assembly with first and second angularly opposed ratchet wheels, said ratchet assembly being affixed to the shaft and positioned so said drive member coacts with said first ratchet wheel to rotate the shaft through a substantially fixed angle in a first direction when said armature moves from the second to the first position, said positioning member, in the first position of said armature, coacting with said second ratchet wheel to accurately position the shaft.

3,967,509

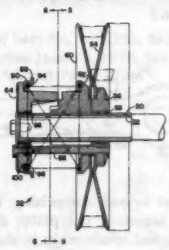
VARIABLE SPEED SECONDARY PULLEY

Richard Donald Teal, Janesville, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 21, 1975, Ser. No. 543,013

Int. Cl.² F16H *55/52, 11/06*

U.S. Cl. 74—230.17 M **6 Claims**



6. In a variable speed secondary pulley of a type including first and second pulley halves coaxially mounted adjacent each other on a shaft means such that the first pulley half is immovably fixed on the shaft means for rotation therewith and the second pulley half is rotatably and axially shiftably mounted on the shaft means for movement towards and away from the first pulley half, first and second member portions respectively fixed to the first and second pulley halves and respectively including first and second axially inclined surfaces shaped complimentary to and engaged with each other such that rotation of the second member relative to the first member will cause the second member to be wedged away from the first member by the interaction of the first and second axially inclined surfaces, and biasing means acting both in torsion and compression between the first and second member portions in such a manner as to bias the pulley halves together and to torsionally bias the first and second axially inclined surfaces together, the improvement comprising: said second member portion and said second pulley half being located on opposite sides of the first pulley half and interconnected by connecting member means; said second member portion being rotatably and axially shiftably mounted on the shaft means; and said biasing means being interposed between the first pulley half and the second member portion.

3,967,510

ACTUATION MEANS PREFERABLY INTENDED TO BE USED IN CONNECTION WITH SAFETY BELTS OF VEHICLES

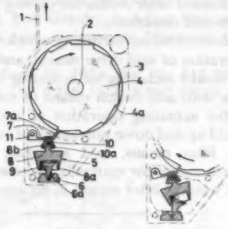
Oskar Lennart Lindblad, Hedasgatan 16, 44020 Vargarda, Sweden

Filed Nov. 21, 1974, Ser. No. 525,985

Claims priority, application Sweden, Nov. 21, 1973, 7315729

Int. Cl.² G05G *5/00;* **B60T** *7/12*

U.S. Cl. 74—575 **9 Claims**



1. A locking actuation device of the type which is sensitive to acceleration and deceleration, particularly for use in connection with vehicle safety belts, said device comprising:

a fixed frame;

a transmission element which is movable from a first non-locking position to a second locking position, said second position being further spaced from said frame than said first position;

a spacer element assembly positioned between said frame and said transmission element and having first and second ends respectively pivotally bearing against said frame and said transmission element;

said spacer element assembly being formed by at least two separate parts which are pivotally articulated to form a toggle-like joint, said parts being laterally pivotable with respect to each other from a stable rest position with said transmission element in said first position to an unstable pivoted position with said transmission element in said second position; and

one of said parts comprising a body of inertia having an unstable center of gravity and forming means sensitive to acceleration and deceleration for laterally tilting with respect to the remainder of said at least two parts from said stable position to said unstable position and for causing said transmission element to move from said first position to said second position.

3,967,511

WINDOW LIFTER OF A MOTOR VEHICLE

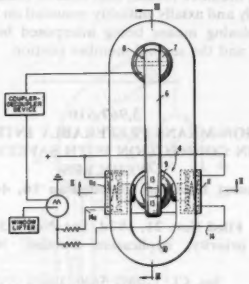
Werner Breitschwerdt, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 4, 1974, Ser. No. 502,941

Claims priority, application Germany, Sept. 6, 1973, 2344862

Int. Cl.² E05F *1/00*

U.S. Cl. 74—625 14 Claims



1. A window lifter for vehicle windows comprising window lifter means for moving a window of a vehicle in respective up and down directions;

drive means including a drive motor operatively connected to said window lifter means for driving said window lifter means in said directions;

electrical control means including switch means for controlling operation of said drive means; and

actuating means including an actuating member being engageable with said switch means of said electric control means for actuating operation of said drive means to effect said up and down movement of said window by said window lifter means, said actuating means including crank arm means for manually and mechanically actuating said window lifter means in an emergency.

3,967,512

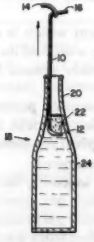
CORK REMOVER

Michael J. Soldano, Monsey, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 19, 1975, Ser. No. 579,038

Int. Cl.² B67B *7/10*

U.S. Cl. 81—3.34 2 Claims



1. Apparatus for removing stoppers pushed down through the neck and into the chamber of a container which comprises elongated probe means of sufficient length for insertion into a necked container to reach through the neck of and into the chamber of such container, said probe comprising shaft means terminating in end means, said end means comprising a flat surface projecting from said probe at an angle substantially normal to said probe, said surface pointing in a direction substantially toward the top of said probe, handle means mounted on the top of said probe for gripably receiving fingers comprising two loop means extending from the top of said probe and thumb rest means extending in the same direction as said flat surface and at an angle to said shaft sufficient to allow upward pressure applied by fingers in said loop means and downward pressure applied by a thumb on said thumb rest for one handed control of said shaft and said flat surface under a stopper in the chamber of a necked container.

3,967,513

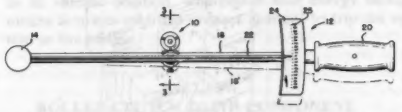
TORQUE SIGNALING ATTACHMENT FOR TORQUE WRENCH

Jack L. Myrdal, 1260 Roy Road, Bellingham, Wash. 98225

Filed Aug. 29, 1975, Ser. No. 608,848

Int. Cl.² B25D *23/142*

U.S. Cl. 81—52.5 7 Claims



1. In a torque wrench having a metal torsion head adapted to engage a mechanical element, a resilient metal torque beam extending radially from said torsion head and terminating in a handle, a metal indicating pointer extending radially from said torsion head at a pointer axially spaced from said torque beam, and a torque indicating plate fastened to said torque beam intermediate said pointer, a torque indicating device comprising:

fastening means for attaching said device to said torque beam at a plurality of points along the length of said torque beam; and

signal means for producing a signal when the lateral offset between said indicating pointer and said torque beam at said point of attachment is a predetermined value such that the value of applied torque actuating said signal means is adjusted by varying the location of said device along said torque beam.

3,967,514

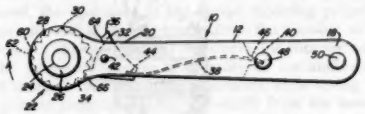
RATCHET WRENCH

Howard E. Deutch, 1216 Holy Cross, Monroeville, Pa. 15146

Filed Jan. 28, 1975, Ser. No. 544,798

Int. Cl.² B25B *13/46*

U.S. Cl. 81—63 1 Claim



1. A ratchet wrench comprising, in combination, a pair of substantially identical, flat plates disposed in spaced-apart, overlying, aligned relationship to define a gap therebetween, said plates having opposite end portions forming a gripping segment and a head segment respectively and a neck segment intermediate said head segment and said gripping segment to form a handle, a flat plate member disposed within said gap in sandwiched relationship with said plates and extending throughout said gripping segment, said plate member being provided with a recess at the end adjacent said neck segment, a plurality of longitudinally spaced rivets in said gripping segment extending vertically through said plates and said plate member, said plates having a pair of vertically aligned openings in said head segment, an elongated, tubular adapter hav-

ing a central bore and an upper end portion extending through said head segment openings with said adapter central bore in coaxial relationship with said openings to form a continuous passage, at least one annular flange on said adapter upper end portion for sliding engagement with one of the plates of said head segment to permit rotation of said adapter relative to said head segment, a ratchet gear having teeth mounted on said adapter upper end portion and disposed within said gap between said plates within said head segment, a plurality of sockets each having a central bore provided at one end with a portion for engaging a nut of a selected size, and an adapter engaging portion at the other end, said adapter having a lower end portion of a cross-sectional shape for accommodation within the adapter engaging portion of each of said sockets selectively with said socket central bore in axial alignment with said adapter central bore to form a continuous passage through said socket, said adaptor and said openings in said head segment thereby accommodating a bolt on which a nut engaged by said socket is mounted, a pawl disposed within said gap at the end of said neck segment opposite said plate member in sandwiched relationship with said plates for pivotal movement within said gap and having one side portion extending within said neck segment, a rivet extending vertically through said plates and said pawl for supporting said pawl for said pivotal movement, said pawl one side portion being provided with a recess, the other side portion of said pawl adjacent said head segment being provided with a pair of spaced-apart teeth engaging surfaces, a substantially S-shaped leaf spring disposed within said gap along said neck portion having opposite ends accommodated with said pawl recess and said plate member recess respectively for yieldingly urging said pawl pivotally in one direction to engage one of said engaging surfaces with said ratchet gear teeth for rotation of said ratchet gear together with said adapter and socket mounted thereon in one direction during the movement of said handle in one direction, the said pawl being pivotally movable by said ratchet gear teeth against the urging force of said spring to engage the other of said engaging surfaces on said pawl with said ratchet gear teeth for rotation of said ratchet gear together with said adapter and socket mounted thereon in the opposite direction during the movement of said handle in the opposite direction.

3,967,515

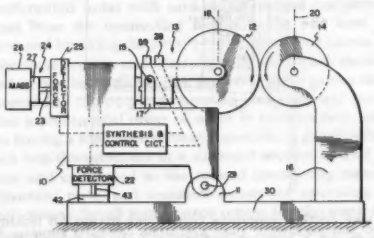
APPARATUS FOR CONTROLLING VIBRATIONAL CHATTER IN A MACHINE-TOOL UTILIZING AN UPDATED SYNTHESIS CIRCUIT

Chester L. Nachtigal, West Lafayette, Ind.; Richard G. Klein, Hudson, and Kenneth C. Maddux, Terrace Park, both of Ohio, assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 469,356, May 13, 1974, abandoned. This application June 13, 1975, Ser. No. 586,572

Int. Cl.² B23B *7/00, 25/06*

U.S. Cl. 82—2 B **9 Claims**



1. An apparatus for controlling a machining operation wherein a workpiece and a machining tool are mounted in a machine structure and one of said workpiece and tool is moved with respect to the other to cause said tool to exert a machining force on said workpiece and to remove material therefrom, comprising first transducer means connected to the machine structure at a position spaced from said tool and workpiece for detecting a force representative of the machining force and for generating a first electrical signal corresponding thereto; second transducer means connected to the machine structure for detecting the actual motion of one of said tool and workpiece in response to the machining force and for generating a second electrical signal corresponding thereto; a synthesis circuit electrically coupled to said first and second transducer means for generating a synthesized electrical signal representative of the motion in response to the maching force of the one of said tool and workpiece not connected to said second transducer means, said synthesis circuit having updating circuit means responsive to said first and second electrical signals for continuously altering parameters of said synthesis circuit in accordance with changes in the machine static and dynamic characteristics; comparison means for comparing said second electrical signal with said synthesis signal and for generating an error signal in accordance therewith; and compensatory force means electrically coupled to said comparison means and having mechanical means for delivering compensatory forces to the machine structure in response to said error signal for maintaining said tool and workpiece in predetermined spatial relationships during the machining process irrespective of vibratory movements of said workpiece, tool, or machine structure.

3,967,516

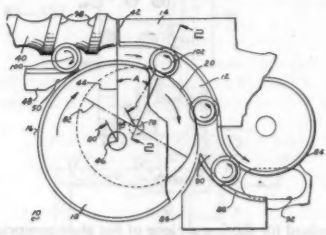
TRIMMING BLOW MOLDED PLASTICS ARTICLES

John E. Griesing, East Granby, and Dan Weissmann, Bloomfield, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 30, 1974, Ser. No. 510,296

Int. Cl.² B23B *5/14;* **B29C** *17/10*

U.S. Cl. 82—47 **12 Claims**



1. In apparatus for trimming flash from blow molded articles of thermoplastic material as they move along a path of travel which includes:

curvilinear fixed guide means and laterally spaced moving guide means including a drive wheel having a circumference matching the curvilinear contour of the fixed guide means forming said path between them; and

a rotary blade adjacent said path for severing the flash from the articles as they traverse said path;

the improvement in said apparatus whereby said articles are well supported before engagement with said rotary blade, which improvement comprises, in combination

means for mounting said blade below and eccentrically offset with respect to the axis of said wheel toward said path; and

means for rotating the blade at a peripheral speed different from that of said drive wheel.

5. In a method of trimming flash from blow molded articles of thermoplastic material which includes:

cutting through the thermoplastic material at the joint between the flash and the remainder of each article with a

blade rotating within a path of travel of the articles as they are advanced along said path between fixed and moving guide members;

the improvement in said method whereby the variability in vertical position and horizontal planarity of the cut is reduced, which improvement comprises, in combination, the step of:

engaging the flash area of said articles with said guide members for a distance of at least ten degress of a circular arc before commencing the cutting, the thermoplastic material in the region of the cut being at elevated temperature within a range defined with aspect to the glass transition temperature of the thermoplastic material as from about 70°F. less than to about 70°F. greater than said glass transition temperature, the peripheral speed of said rotating blade during cutting being greater than the speed of said moving guide member.

3,967,517

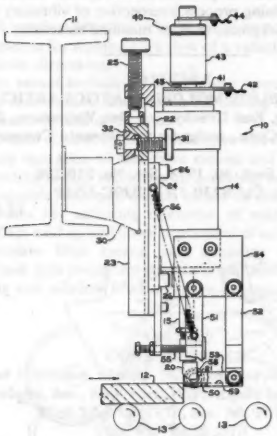
GLASS SCORING HEAD AND METHOD

Robert M. Bonaddio, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 8, 1975, Ser. No. 594,154

Int. Cl.² B26D *3/08*

U.S. Cl. 83—7 **15 Claims**



1. A method for scoring a piece of flat glass comprising the steps of:

pressing a scoring wheel under scoring force against a platform surface;

bringing a piece of glass to be scored into edge-to-edge abutment with said platform, with a major surface of the glass at substantially the same elevation as said platform surface along the line of abutment therebetween;

rolling the scoring wheel along said platform surface and directly onto said major surface of the glass so as to score the glass.

3,967,518

CAMERA FILMSTRIP PROCESSOR CONTROLLED BY FILM MARKS

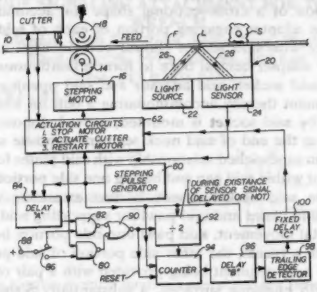
Gerald L. Edwards, Seattle, Wash., assignor to CX Corporation, Seattle, Wash.

Filed Mar. 31, 1975, Ser. No. 563,296

Int. Cl.² B26D *5/32, 5/34*

U.S. Cl. 83—210 **7 Claims**

1. Apparatus for processing an elongated filmstrip and the like at selected locations spaced lengthwise of the filmstrip during advancement thereof along a path extending past an operating device, wherein the filmstrip has control marks that are centered precisely at predetermined interval locations spaced along the length of the filmstrip but of varied width measured lengthwise of the filmstrip, said apparatus comprising sensor means having a mark detector at a station spaced a predetermined distance from said operating device lengthwise of said path, and operable to sense passage of the respective leading and lagging edges of each mark as a point along each such edge passes said station, said sensor means being thereby operable to measure a first advancement interval corresponding to the width of each mark between the sensed



edge points thereof passing such station, said sensor means being operable to time actuation of the operating device after advancement of the filmstrip following one such edge point passing said mark detector by a distance corresponding to half said first interval added to a predetermined second interval, thereby resulting in actuation of the operating device each time the filmstrip advances by a fixed distance in relation to the mark detector independently of differences that may occur from one mark to the next in their respective measured mark width intervals.

3,967,519

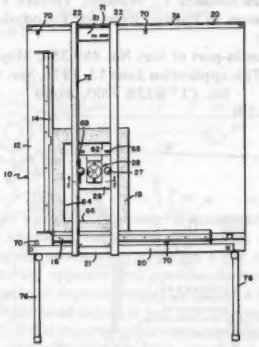
MULTI DIRECTIONAL WEB CUTTER

Harry F. Esterly, 47 Rowley Road, Topsfield, Mass. 01983

Filed July 16, 1974, Ser. No. 488,962

Int. Cl.² B26D *1/02*

U.S. Cl. 83—455 **19 Claims**



1. A web cutting apparatus comprising means for holding the web on a support surface; a pair of spaced tracks mounted on said support surface; at least one other cross-track positioned across said pair of tracks and moveably mounted thereon to slide laterally along said pair of tracks to and fro; a knife carriage moveably mounted on

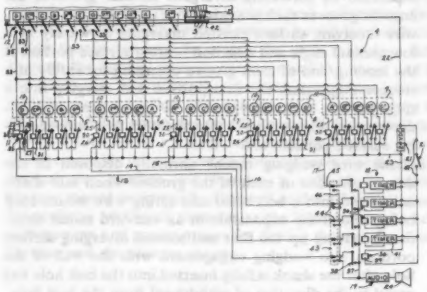
said cross track; a rotatable blade assembly rotatably mounted on said carriage; (a blade mounted on said blade assembly and positioned to contact the web thereunder to cut the same;) means for rotating said blade assembly to cut said web in a plurality of directions; said blade assembly having resiliently mounted at the base thereof a blade guide means, said guide means terminating in a smooth surfaced foot for riding over the web, said guide means having a blade mounted thereon and penetrating beyond said foot and means for adjusting the depth of penetration of said blade beyond said foot; means for moving said knife carriage along said cross-track and means for moving said cross-track along said pair of tracks so as to move said blade a plurality of directions over said web to cut the same.

3,967,520

GUITAR CHORDING DEVICE FOR KEYBOARD INSTRUMENTS

Lawrence A. Drydyk, 13010 W. Park Ave., New Berlin, Wis. 53151

Filed Nov. 18, 1974, Ser. No. 524,982
Int. Cl.² G10H *1/02, 5/02*
U.S. Cl. 84—1.01 **19 Claims**



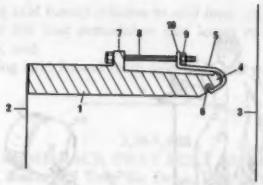
1. An apparatus comprising a plurality of individual tone generating sections, a plurality of output connecting means, one for each section, each of said sections including a plurality of tone source means each operable to form an audio frequency signal for a selected musical note and each section defining a different combination of notes from that of the other sections with selected notes repeated in different sections, a preferential switch and circuit means including switch means in each section for each of said note source means, each of said sections having circuit means connecting said switch means in each section to each other and to said output connecting means for connecting of said tone source means of a section to a corresponding output connecting means for that section, said switch means in each section being connected in a preferential order with said switch means completing the circuit from the connecting means to the one tone source means and breaking the circuit to the other tone source means of the same section and whereby with two switch means activated in one section only one preferred tone source means is connected to the output connecting means of said section to define a preferential order of notes in each section, said sections having a tone source means operable to develop the note which was disconnected in a different section by said switch means and connected to the related connecting means as a preferential note, and common means for operating of the switch means for all tone source means for the same note in said sections whereby simultaneously activating one or more of the switch means in said sections generates a selected note at each of said output connecting means, said preferential order controlling the particular note impressed on the output connecting means in each section and generates an audibly pleasing voicing sequence.

3,967,521

HAMMER FOR PIANOS AND SIMILAR INSTRUMENTS

Gunnar Sjöstrand, Atvidaberg, Sweden, assignor to Incentive AB, Stockholm, Sweden

Filed Apr. 30, 1975, Ser. No. 573,133
Claims priority, application Sweden, May 15, 1974, 7406462
Int. Cl.² G10C *3/18*
U.S. Cl. 84—254 **7 Claims**



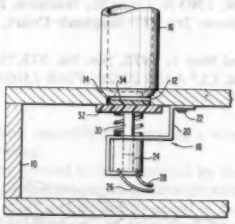
1. Hammer for pianos or similar instruments having a stringed or tuned plate to be struck by the hammer, comprising a core having a surface facing said string or plate, and a cover disposed on said surface consisting of a band made of elastic material, one end of said band being fixedly attached to said core, the other end of the band being attached to the core by an adjustable tensioning device for varying the tone by adjusting the tension of the band.

3,967,522

VALVE FOR PIPE ORGANS

Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22980

Filed Apr. 28, 1975, Ser. No. 572,579
Int. Cl.² G10B *3/06*
U.S. Cl. 84—334 **1 Claim**



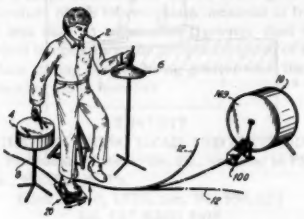
1. In a wind chest for a pipe organ of the type having a plurality of cylindrical apertures in the upper surface thereof adapted to be in communication with the pipes of said organ and a valve means associated with each aperture to control the flow of air from the chest to the pipes, the improvement comprising each of said valve means having a valve member and means for moving said valve member into and out of engagement with the interior of the wind chest about the entire circumference of the respective aperture; said valve member being comprised of a circular disc-like member having a cylindrical projection concentrically located on and extending outwardly from one surface so as to be located within the circular aperture in the wind chest when the valve member is in engagement with the wind chest to prevent a pipe from speaking if the valve member should bounce slightly during closing.

3,967,523

POWER DRIVEN DRUM BEATER

George T. Currier, 470 Gregory Ave., Weehawken, N.J. 07087, and Dennis M. Canavan, 242 River Road, North Arlington, N.J. 07032

Filed June 3, 1975, Ser. No. 583,426
Int. Cl.² G10D 13/00
U.S. Cl. 84—422 R 37 Claims



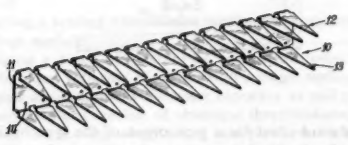
1. A foot pedal control device for use in controlling an electric drum beater, comprising: base means, a foot rest mounted on said base means so as to be movable about a pair of axes; a plurality of first electrical contact means on said base means and second electrical contact means on said foot rest; biasing means maintaining a separation between said first and second contact means; and electrical circuit means including variable resistance means connected to each of said first contact means and to said drum beater for actuating same upon contact of said second contact menas with any one of said first contact means.

3,967,524

INSULATION BLOCK FASTENER

Kenneth T. Snow, 1303 N. Cross St., Wheaton, Ill. 60187, and Kenneth T. Snow, Jr., 317 Shagbark Court, Schaumburg, Ill. 60172

Filed May 1, 1975, Ser. No. 573,780
Int. Cl.² A43B 23/20; F16B 15/00
U.S. Cl. 85—13 2 Claims



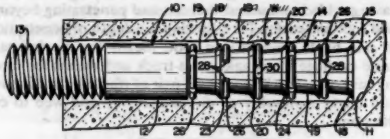
1. A metal fastener made of relatively thin metal for holding an insulation block to a rigid surface, said fastener having a flat back adapted to lie flush against the rigid surface, means fastening said flat back to the rigid surface, said fastener including tapered spikes bent at right angles from both sides of said flat back and extending in the same direction and lying generally parallel to each other, the thickness of said spikes being only the thickness of the metal and having a sharp point at their outer ends and being broad near their inner ends, whereby when said spikes are covered with an adhesive and an insulating block is pressed onto the spikes the insulating block is fixedly and firmly attached to said rigid surface.

3,967,525

SPRING ACTION EXPANSION BOLT

Lester Lerich, Broomfield, Colo., assignor to Wej-It Expansion Products, Inc., Broomfield, Colo.

Filed Jan. 2, 1974, Ser. No. 422,537
Int. Cl.² F16B 13/04
U.S. Cl. 85—79 2 Claims



1. A masonry expansion bolt for attachment within a bolt hole comprising:

a generally cylindrical shank portion adapted for insertion in a bolt hole and having a diameter equal to or slightly less than the bolt hole;

a wedging section extending at least along a portion of said shank including a plurality of annular ridge portions spaced apart along the length of the wedging section and separated by forwardly divergent annular grooves, the annular grooves each provided with a first relatively deep, wire-receiving surface portion diverging forwardly at a low gradual angle and a second bearing surface portion at the leading end of each groove diverging forwardly at a steeper angle than the first portion and merging into a ridge portion each ridge portion having an annular shoulder portion which merges into the next first wire-receiving surface portion; and

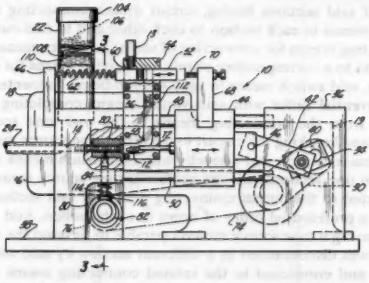
resilient wire wedging means normally disposed in the deeper portions of each of the grooves when said shank is inserted into a bolt hole, said spring wire means each being selectively expansible in an outward radial direction by riding up the first and second diverging surface portions into wedging engagement with the wall of the hole after the shank is fully inserted into the bolt hole and urged in the direction of withdrawal from the bolt hole.

3,967,526

APPARATUS FOR LUBRICATING AND SIZING SLUGS

Robert A. Leich, Southfield, Mich., assignor to Camdex, Inc., Warren, Mich.

Filed June 10, 1974, Ser. No. 477,651
Int. Cl.² F42B 31/02
U.S. Cl. 86—19 12 Claims



1. Apparatus for lubricating and sizing slugs for use in manufacturing ammunition comprising: a source of semifluid lubricating material, a body having a first presized passage for receiving slugs for intermittent movement therethrough and a second passage communicating with the source of lubricating material, first means for metering slugs through the first pas-

sage, second means for metering lubricant from the second passage to the first passage, and power means for cyclically operating the first and second means in a predetermined timed relationship whereby the lubricating material is applied to the exterior of each of said slugs while in said first passage, the second means including a plunger cylinder formed in said body and intersecting the first and second passages, a lubricating pump plunger reciprocally carried in the cylinder, and drive means mechanically driving the pump plunger and interconnected with the power means to be driven thereby, means associated with said source for pressurizing the lubricating material to urge the material into the second passage, the plunger operating to discommunicate the source from the second passage when in a position which applies additional pressure to the lubricating material in the plunger cylinder, a third passage interconnecting the first passage with the second passage, and check valve means in the third passage for allowing the flow of excess lubricating material from the first passage to the second passage when the pressure applied by the plunger exceeds the pressure of the source.

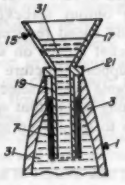
11. Apparatus for lubricating and sizing slugs for use in manufacturing ammunition comprising: a body defining a slug passage and a lubricant passage intersecting the slug passage, a source of lubricant under pressure connected to the lubricant passage, a sizing die removably disposed in said body and forming part of the slug passage, means for intermittently metering slugs into the slug passage and comprising means forming a substantially vertical passage having a smooth curve which terminates into the sizing die such that slugs falling through the vertical passage carry around the curve and into the sizing die, intermittently operated ram means extending into the curved portion of the passage for pushing slugs into and through the sizing die, transfer means for metering slugs, one at a time, from a supply tube into the passage, a cover plate removably mounted on and over at least a portion of the vertical slug passage and forming a wall of the passage, plunger means reciprocally disposed in the lubricant passage for applying additional pressure to the lubricant in the lubricant passage and power means for driving the transfer means, the ram and the plunger means.

3,967,527

METHOD OF PRODUCING A CAVITY IN THE BURSTING CHARGE OF A HIGH EXPLOSIVE PROJECTILE

John A. Dunn, Parsippany, and Leonard Frank, Hackettstown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 11, 1975, Ser. No. 595,194
Int. Cl.² C06B *21/00*; F42B *3/00*
U.S. Cl. 86—20 B **5 Claims**



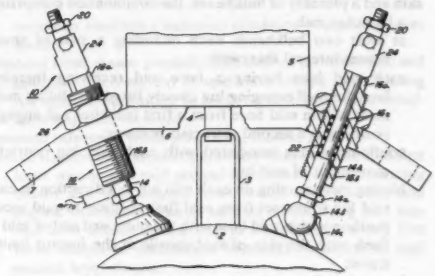
1. A method of making a high explosive projectile comprising a hollow metal housing containing a bursting charge having a metal liner embedded therein, comprising the steps of:
forming an axial bore in one end of said hollow projectile housing;
inserting an elongated open-ended tubular liner through said bore and rigidly securing the outer end of said liner to said projectile housing in said bore, with the liner extending axially into said housing;
supporting said projectile housing with its longitudinal axis vertical and said one end up;
inserting the tubular stem of a pouring funnel into said liner until the lower ends of said liner and funnel are flush with each other;
providing a liquid-tight seal between said lower ends;
pouring sufficient molten explosive material into said funnel to fill said projectile housing and said tubular stem to a level above said liner;
cooling said explosive material to a substantially solid cast state;
rotating said funnel relative to said liner and said housing to shear the cast material at said lower end of said funnel stem; and
removing said funnel from said liner and projectile.

3,967,528

BOMB RACK SWAY BOLT ASSEMBLY

Curtis K. Baker, 25 Tally Ho Drive, Warminster, Pa. 18974, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1974, Ser. No. 458,141
Int. Cl.² F41F *5/02*; F16B *39/02*
U.S. Cl. 89—1.5 B **3 Claims**



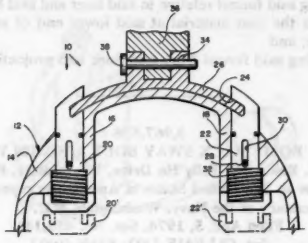
3. A sway bolt assembly for securing a store suspended in a rack, comprising:
sleeve means formed to be supported by the rack;
rod means slidably extending through said sleeve means along an axis approximately normal to the surface of the store and having one end formed to abut the surface of the store;
first spring means interposed between said sleeve and said rod means for urging said rod means outward from said sleeve means toward the store;
first stop means secured adjacent to the other end of said rod means for limiting the outward movement of said rod means relative to said sleeve means; and
indicator means affixed to said rod means for indicating the compression force of said first spring means at a predetermined position of said rod means relative to said sleeve means, including a release tab pivotally connected to said other end of said rod means having distal planar surfaces formed to abut corresponding surfaces of said first stop means and said sleeve means, and second spring means interposed between said release tab and said rod means for urging the free end of said release means out of abutment when the compression force of said first spring means is above a predetermined level.

3,967,529

RAIL LAUNCHED MISSILE

Colburn L. Ingle; Robert D. Cook, and Joseph E. Hibbs, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 20, 1974, Ser. No. 481,092
Int. Cl.² F41F 7/00
U.S. Cl. 89—1.819 6 Claims



1. In a missile system including a missile having an outer skin and a plurality of bulkheads, the combination comprising:
a launcher rail;
at least two bulkheads each including a pair of spaced bosses integral therewith;
each said boss having a bore and receiving therein a launcher rail engaging lug closely fitted for sliding movement within said bore from a first launcher rail engaging position to a second retracted position;
confining means associated with each said lug restricting movement of said lug;
biasing means acting on each said lug in a direction to cause said lug to retract from said first position to said second position within said boss with the outboard end of said lug flush with the skin of said missile at the inward limit of travel;
launcher rail engaging means on each said lug;
said launcher rail being attached to said missile by means of said lugs; and
attachment means on said launcher rail for attachment of the launcher rail to an aircraft stores rack or the like.

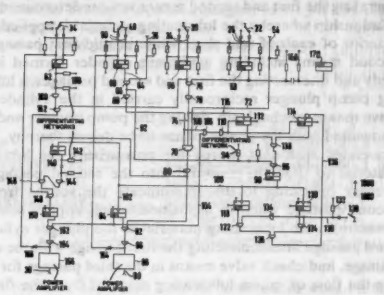
3,967,530

DEVICE FOR CONTROLLING THE FIRING CURRENT OF A QUICK-FIRING WEAPON

Ludwig Vorgrimler, Oberndorf (Neckar), and Klaus Vorgrimler, Grunwettersbach, both of Germany, assignors to Industriewerke Karlsruhe-Augsburg Aktiengesellschaft, Germany

Filed Oct. 9, 1973, Ser. No. 405,626
Claims priority, application Germany, Jan. 4, 1973, 2300260
Int. Cl.² F41D 11/08, 11/10
U.S. Cl. 89—135 5 Claims

1. A device for controlling the firing current of a blow-back operated, electrically fired quick-firing weapon, comprising a signal transmitter signalling the closed position of the slider of said weapon, said device comprising, in combination, a first circuit means for producing a firing current pulse; a second circuit means responding to the movement of said slider away from and back to its closed position and producing a first control signal only after completion of such an away from and back movement of said slider; a third circuit means triggered by said firing control pulse through an electric time delay element and producing a second control signal; and a logic circuit having two inputs, to which said first and second control signals are applied, and having an output connected to said first circuit means to trigger a firing current control pulse.

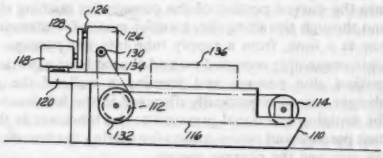


3,967,531

CONTINUOUS OR CHAIN BROACHING MACHINE

David J. Cartner, Royal Oak, Mich., assignor to Swift Engineering Company, Inc., Royal Oak, Mich.

Filed Nov. 18, 1974, Ser. No. 524,734
Int. Cl.² B23D 37/18, 41/00
U.S. Cl. 90—78 14 Claims



1. A continuous or chain broaching machine comprising an elongated frame, a fixture drive shaft having fixture drive sprocket means adjacent one end of the frame, an idler shaft having driven sprocket means adjacent the other end of said frame, fixture drive chain means trained over said sprockets, a tunnel extending longitudinally of said frame through which one run of said chain means extends, driven sprocket means on said fixture drive shaft, a separate, self-contained power input assembly having a unitary support structure separate from said elongated frame but connected thereto in a selected position, said assembly comprising motor means, speed reducer means connected to said motor means, said speed reducer means having output sprocket means, the output sprocket means of said speed reducer means being aligned with the driven sprocket means on said fixture drive shaft when said unitary support structure is connected to said broaching machine frame in said selected position, and input chain means connecting the output sprocket means of said speed reducer means to the driven sprocket means on said fixture drive shaft.

3,967,532

FORWARD-REVERSE VALVE FOR ELEVATING SCRAPER DRIVE

Joseph Kokaly, Buckeye, Ariz., assignor to Caterpillar Tractor Co., Peoria, Ill.

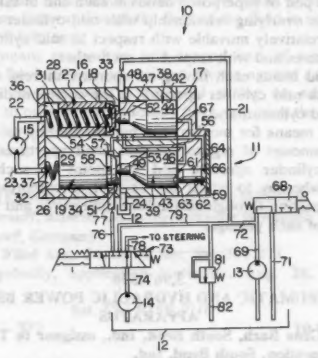
Filed Jan. 7, 1974, Ser. No. 431,384
Int. Cl.² F15B 11/08, 13/042
U.S. Cl. 91—420 5 Claims

1. In a hydraulic system comprising a fluid flow circuit having a fluid supply source including a pump and a tank, a reversible hydraulic motor, conduit means for communicating between said source and said motor, inlet control valve means

for directing fluid through said conduit means in a forward or reverse direction for operating said motor in a forward or reverse direction, and exhaust valve means for communicating return fluid from said motor to said tank, the improvement comprising:

a valve housing having first and second bores therein, said valve housing being disposed in said circuit between said supply source and said motor so that forward fluid flow within said circuit is sequentially directed from said supply source, through said first bore, through said motor, and through said second bore to said tank, and so that reverse fluid flow within said circuit is sequentially directed from said fluid supply source, through said second bore, through said motor, through said first bore through said exhaust valve means and to said tank;

first pilot operated check valve means disposed within said first bore for regulating forward fluid flow from said supply source to said motor, said first check valve means opening in response to accumulated fluid pressure when fluid is flowing in a forward direction to permit fluid flow



from said fluid supply source, through said first bore, to said motor, and pilot means responsive to pressure in said second bore for opening said first check valve means when fluid is flowing in a reverse direction; and,

second pilot operated check valve means disposed within said second bore for regulating return fluid flow between said motor and said tank, said second check valve means including pilot means for opening said valve in response to accumulated pressure within said first bore to permit fluid flow from said motor, through said second bore, to said tank, when fluid is being supplied in said forward direction, and said second check valve means being responsive to a drop in pressure in said conduit means between said second check valve means and said motor to provide direct flow of fluid from said tank to said motor, and including relief means responsive to an excess of pressure in said conduit means between said second check valve means and said source to open said second check valve means to relieve said excess pressure to said tank via said second check valve means.

3,967,533

SERVO VALVE CONTROL APPARATUS

Henry P. Tyler, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 23, 1974, Ser. No. 535,904
Int. Cl.² F15B 9/10, 15/17
U.S. Cl. 91—49 **10 Claims**

1. In a servo system the combination of:

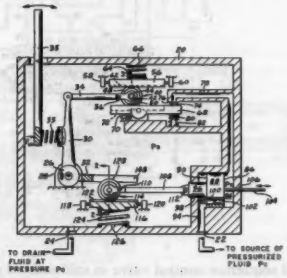
conduit means connecting a source of pressurized fluid with a relatively lower pressure source;

valve means having a characteristic force unbalance imposed thereon operatively connected to said conduit means for controlling fluid flow therethrough to generate a controlled fluid pressure;

movable output means responsive to said controlled pressure for producing an output signal;

first lever means pivotally mounted on a first axis and responsive to an input force imposed thereon;

feedback means including a first reference force generating means operatively connected to said movable output means and said first lever means for imposing a force against said first lever means in opposition to said input force in response to movement of said movable output



means to establish a balanced condition of said first lever means;

second lever means pivotally mounted on a second axis and operatively connected to said valve means for actuating the same in opposition to said characteristic force unbalance imposed thereon;

second reference force generating means; and

force transmitting means operatively connected to said first lever means and said second reference force generating means and said second lever means for imposing said second reference force at various points along said second lever means in response to the position of said first lever means to establish a balanced condition of said second lever means.

3,967,534

HYDRAULIC CONTROL SYSTEM WITH SEQUENCE HYDRAULIC JACKS

John R. Cryder, and Edward A. Wirtz, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 25, 1974, Ser. No. 517,946
Int. Cl.² F15B 11/20, 13/07
U.S. Cl. 91—189 R **8 Claims**

1. A control system for sequential operation of a plurality of hydraulic motors, said system comprising:

at least a first and a second hydraulic motor;

a source of motive fluid for operation of said hydraulic motors;

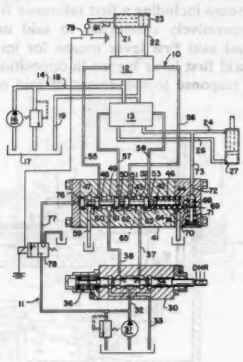
sequence control means including a first and a second pilot-operated control valve for directing said motive fluid to and from said first and said second hydraulic motors for sequential operation thereof;

a source of pilot fluid for shifting said valves;

a pilot selector valve for selectively directing pilot fluid for shifting said first and said second control valves; and,

said sequence control means further including a sequence control valve intermediate said pilot selector valve and said first and second control valves and responsive in a first position for communicating pilot fluid upon movement of said pilot selector valve in a first direction for shifting said first of said control valves first for extension of said first hydraulic motor, and pilot means responsive to extension of said first motor for shifting said sequence

control valve to a second position for communicating pilot fluid for shifting the second of said control valves for operation of said second motor in a first direction after said first motor is extended a predetermined amount activating said pilot means, and



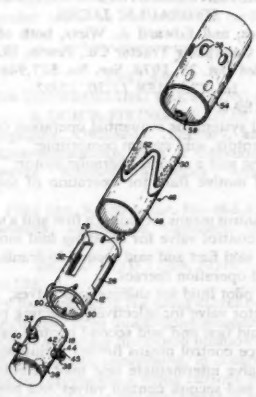
said sequence control valve in said second position communicating fluid upon movement of said pilot selector valve in a second direction for communicating fluid for shifting said second of said control valves for retraction of said second motor and means responsive to full retraction of said second motor for shfting said sequence control valve to said first position for actuating said first control valve for retraction of said first motor.

3,967,535

UNIFLOW STEAM ENGINE

Murry I. Rozansky, 117 Joyce Kilmer Ave., New Brunswick, N.J. 08902

Filed Feb. 21, 1974, Ser. No. 444,540
Int. Cl.² F01B *13/04*
U.S. Cl. 91—197 **14 Claims**



1. A uniflow engine-compressor comprising:

a. a hollow cylinder having a longitudinally extending slot therein;

b. a piston reciprocably movably disposed within said cylinder;

c. a cylindrical cam member in surrounding relation with said cylinder and having a circumferentially extending sinusoidal cam track therein, said cylinder being rotatable within said cam member;

d. a cam follower mounted on said piston and extending radially outward therefrom through said longitudinal slot in said cylinder and into said cam track, whereby reciprocable movement of said piston within said cylinder will cause said piston and cylinder to rotate relative to said cam member;

e. a cylinder head at each end of said cylinder, said longitudinal slot in said cylinder being proportioned to prevent said piston from engaging either of said cylinder heads, whereby to define a clearance space at each end of said cylinder;

f. said cylinder having an aperture therethrough at each end thereof leading into said clearance spaces; and

g. means for periodically passing compressible fluid through said apertures in said cylinder between said clearance spaces and outside of said cylinder comprising;

i. a pair of superposed bands at each end of said cylinder in overlying relationship with said cylinder and being relatively movable with respect to said cylinder apertures and with respect to each other;

ii. said bands each having an aperture therein registrable with said cylinder aperture at the corresponding end of said cylinder; and

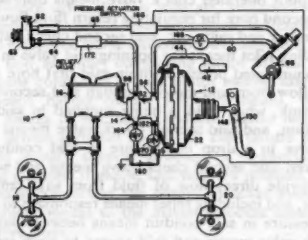
iii. means for moving said bands whereby to adjust the amount of register of said band apertures and said cylinder aperture and the point of such register, whereby to adjust the amount of compressible fluid passing through said cylinder apertures and the timing of such passage.

3,967,536

PNEUMATIC AND HYDRAULIC POWER BRAKE APPARATUS

Lloyd Gene Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed May 29, 1975, Ser. No. 582,052
Int. Cl.² F15B *9/10*
U.S. Cl. 91—371 **12 Claims**



8. A power braking apparatus for use in a vehicle comprising:

a housing having an axial bore therein with an inlet port and an outlet port, said inlet port being connected to a first conduit containing a source of fluid under pressure, said outlet port being connected to a second conduit returning said fluid under pressure to reservoir;

piston means located in said axial bore for establishing an inlet chamber adjacent said inlet port and an outlet chamber adjacent said outlet port, said piston means having a first passageway therethrough for connecting said inlet chamber with said outlet chamber;

valve means for regulating the flow of said fluid under pressure through the first passageway from the inlet chamber into the outlet chamber;

disc means located in said first passageway for establishing a control chamber and a reaction chamber, said control chamber being in direct communication with said inlet chamber and said reaction chamber being in connection with said outlet chamber;

stem means extending through said disc means and having a head on a first end and a second end, said first end being located in said control chamber, said first end having an axial slot therein through which the outlet chamber is communicated with the reaction chamber;

input means connected to said piston means and responsive to an operational input force for moving said valve means toward a seat in said first passageway to restrict the flow of said fluid under pressure from the inlet chamber to the outlet chamber to establish a pressure differential therebetween, said pressure differential moving said piston means to establish an output force;

resilient means located in said first passageway and connected to said valve means to limit the restriction of the flow of said fluid under pressure to the outlet chamber to avoid an interruption of the flow of the fluid in said second conduit; and

keeper means secured to said second end of said stem means for holding said resilient means against said disc means, said pressure differential acting on said disc means to provide a reactionary force opposing the operational input force.

3,967,537
PRESSURE MEDIUM CONTROL DEVICE

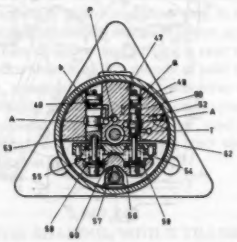
Günther Strauff, Kaarst, Germany, assignor to Langen & Co., Duesseldorf, Germany

Filed Aug. 24, 1973, Ser. No. 391,271

Claims priority, application Germany, Aug. 26, 1972, 2242021

Int. Cl.² F15B 9/10

U.S. Cl. 91—372 **10 Claims**



1. A fluid pressure control device for controlling a servo-motor, comprising in combination; a servo-motor having at least one working chamber, a power input member, a power output member, said power input member and power output members having relative movement,

a pressure fluid source,

at least one control valve of the closed-center type with blocked ports in a neutral position including means operable through relative movement between said power input and said power output member, flexible coupling means operatively connecting said power input member to said power output member,

said servo-motor being operatively connected to said power output member, said control valve including at least one reaction area including means for reflecting developing fluid pressure to said power input member; and lost motion coupling means operatively connected between said control valve and said power input member for permitting said control valve to move relative to the output number without relative movement between said power input member and power output member.

3,967,538
HYDRAULIC BOOSTER

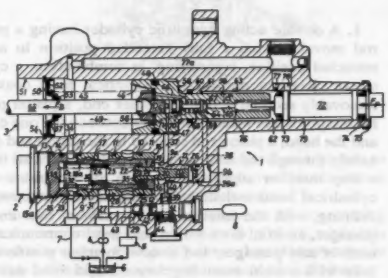
Alfred William Thomas, Saarbrucken, Germany, assignor to Deutsche Bendix Ausrustungs GmbH, Saarbruecken, Germany

Filed Mar. 17, 1975, Ser. No. 559,201

Claims priority, application Germany, Mar. 19, 1974, 2413079; Mar. 19, 1974, 2413080

Int. Cl.² F15B 13/10, 11/08, 13/042

U.S. Cl. 91—391 R **5 Claims**



1. Hydraulic booster comprising:

housing means defining a working chamber and a control chamber therein;

a piston slidably mounted in said working chamber;

valve means responsive to a fluid pressure level in said control chamber to shift from a released position venting said working chamber to communicate successively higher fluid pressure levels into said working chamber as said valve means is shifted from said released position;

an output plunger operatively connected to said piston and slidably received within said control chamber;

operator-actuated means including an input plunger slidably received within said control chamber filled with a hydraulic fluid;

said input plunger having a greater transverse cross sectional area than the output plunger;

said input plunger being so mounted in said control chamber to actuate said output plunger upon failure of fluid control level in said control chamber to permit direct mechanical actuation of said piston;

said valve means having one of its faces exposed to the fluid pressure prevailing in the working chamber and the other of its faces exposed to the fluid pressure level prevailing in the control chamber;

said valve means includes a spool and a control piston cooperating therewith, said control chamber including a portion receiving said control piston, said control piston having a reduced diameter with respect to the spool valve diameter;

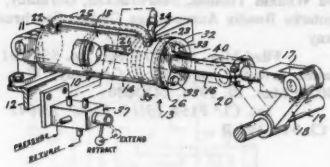
the control piston is telescopically mounted in the spool, said spool being sleeve-shaped to define an inner compartment, the control piston being adapted to be displaced in a limited manner with respect to the spool from a rest-abutting position into which said control piston is biased by a return spring, said control piston having a supply passage permitting the fluid under pressure to flow from the inner compartment of the sleeve-shaped spool to the working chammber, said supply passage being closed under the displacement of the control piston into the spool.

3,967,539

VARIABLE STROKE FLUID CYLINDER

Robert E. Williamson, 446 Caldwell St., Bradner, Ohio 43406

Filed Nov. 20, 1974, Ser. No. 525,361
Int. Cl.² F15B *13/042, 15/24*
U.S. Cl. 91—404 **3 Claims**



1. A double acting hydraulic cylinder having a piston and rod movable from a fully extended position to a variable retracted position, comprising, in combination, a cylindrical sleeve closed at one end, a cylindrical head coaxially and removably secured within the other end, a piston positioned for reciprocation within the sleeve between the one closed end and the head, a piston rod secured to the piston and extending axially through the head so as to reciprocate with the piston, a stop member adjustably secured to said piston rod, said cylindrical head including first and second external grooves defining, with the interior sleeve surface, first and second passages, an axial bore within said head communicating with each of said passages, and a valve member positioned in the bore with a stem extending beyond said head and movable between an open position wherein the passages are in communication and a closed position wherein the passages are isolated from each other, and said sleeve further including a first connection adjacent the head and leading to an external fluid source for applying fluid pressure to the side of the piston adjacent the head, a second connection adjacent said one closed end of the sleeve, a third connection in communication with said first external groove in the head, a fluid line connecting said second and third connections, and a fourth connection in communication with said second external groove in the head and leading to an external fluid reservoir, whereby, when said valve member is in the open position, pressurized fluid from the external source can flow into the first connection to retract the piston and rod, sequentially moving fluid outwardly through the second connection, through said fluid line and into the third connection, through said first passage and said axial bore to said second passage, and out the fourth connection, and whereby, when said valve member is moved to closed position by said stop member on said retracting piston rod, outward fluid flow through the second connection is stopped, thereby preventing further movement of the piston and rod.

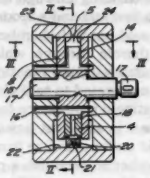
3,967,540

ROTOR, PISTONS, PISTON SHOES AND ASSOCIATED MEANS IN FLUID HANDLING DEVICES

Karl Eickmann, 2420 Isshiki, Hayama, Kanagawa, Japan

Filed Jan. 8, 1973, Ser. No. 321,854
Claims priority, application Austria, Jan. 7, 1972, 138/72
Int. Cl.² F01B *13/06*
U.S. Cl. 91—488 **7 Claims**

1. In a fluid-handling machine of the type having a housing formed with a cavity having an inner circumference, a rotor body rotatably mounted in said cavity and having an outer periphery and a plurality of radial cylinder bores extending inwardly thereof, and a plurality of pistons each slidably accommodated in one of said cylinder bores, the improvement comprising a plurality of recesses formed in said outer periphery of said rotor body, each intersecting the outer end of one of said cylinder bores and extending from the associated cylinder bore in one circumferential direction of said rotor body; a plurality of piston shoes each located adjacent the outer end of one of said cylinder bores and pivotably connected to the piston accommodated therein, said piston shoes each having an outwardly directed face in sliding engagement with said inner circumference and an extension projecting transversely of and beyond the associated cylinder bore in said one circumferential direction of said rotor body, said cylinder bores, recesses and piston shoes being configurated so that in the



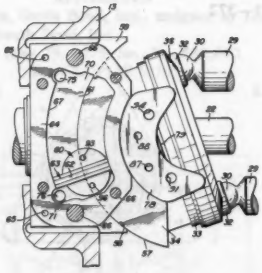
fully retracted position of the respective piston shoe the same is located substantially entirely within the associated recess and outer end of the associated cylinder bore without projecting beyond the outer periphery of said rotor body; and wall means on said rotor body, projecting radially of said outer periphery thereof toward said inner circumference at opposite axial sides of the respective piston shoes for preventing displacement of the same in axial direction of said rotor body.

3,967,541

CONTROL SYSTEM FOR AXIAL PISTON FLUID ENERGY TRANSLATING DEVICE

Ellis H. Born; William H. Meisel, and Alan H. Viles, all of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,677
Int. Cl.² F01B *13/04*
U.S. Cl. 92—12.2 **51 Claims**



1. In a variable displacement fluid energy translating device having a housing, a barrel rotatably supported in the housing, a plurality of cylinders formed in the barrel and aligned parallel with the axis of rotation thereof, a piston mounted for reciprocation in each cylinder, a port plate at one end of the barrel in communication with the inlet port and outlet port of the device, a shoe connected to the end of each piston projecting from a cylinder, a rocker cam support, a rocker cam pivotally mounted in the support for movement about an axis perpendicular to the axis of rotation of the barrel, a surface on the rocker cam for engaging the piston shoes, and means for retaining the piston shoes against the rocker cam surface such that the pistons are caused to reciprocate within the cylinders when the cam surface is inclined, the improvement comprising fluid motor means for pivoting the rocker cam to change the inclination of the rocker cam for varying the displacement of the device including a first fluid motor member rigidly secured to the rocker cam, a second fluid motor member which is

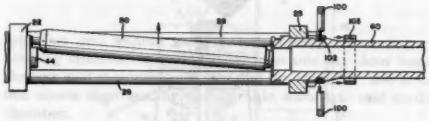
secured to said housing and overlies a portion of the rocker cam and the second fluid motor member is cooperative with the first fluid motor member, and the rocker cam to define first and second sealed fluid receiving chambers, and valve means for selectively supplying pressure fluid to one of said chambers and simultaneously exhausting fluid from the other of said chambers to effect movement of said first fluid motor member to selectively position the rocker cam.

3,967,542

HYDRAULIC INTENSIFIER

Richard W. Hall; Daniel A. Schutte, and Sven Sonnenberg, all of Springfield, Ohio, assignors to Kelsey-Hayes Company, Springfield, Ohio

Filed Nov. 20, 1974, Ser. No. 525,568
Int. Cl.² F01B *11/02*
U.S. Cl. 92—85 B **5 Claims**



1. An improved hydraulic intensifier for oil well fracturing, erosion drilling or the like having a bed and at least two intensifier units mounted on said bed in which the intensifier units each include a hydraulic piston motor connected in direct driving relation to a working ram, the improvement in intensifier structure providing for ease of maintenance in the field comprising means defining a back wall, an intermediate wall spaced from said back wall and a front wall spaced from said intermediate wall, the cylinder of said hydraulic piston motor positioned between said back wall and said intermediate wall, the working ram including a ram cylinder supported in an opening formed on said front wall, said front wall, intermediate wall and back wall being joined by a plurality of tension rods, spacer sleeves on said rods between said intermediate wall and front wall and defining therebetween a generally open clearance space, a piston rod assembly in said cylinder having a forward end extending into said space, a working ram received in said ram cylinder and having a rear end received in said space, removable coupling means in said space joining said rod and ram, the axial length and transverse width of said clearance space being greater than the corresponding length and width of either said ram or ram cylinder, said ram and said ram cylinder being removable through said space without distrubing said tension rods.

3,967,543

APPARATUS FOR SHAPING, WHILE TRANSFERRING, UNDERSTRIPS OF HINGE LID CIGARETTE PACKETS

Enzo Seragnoli, Bologna, Italy, assignor to G. D Societa Per Azioni, Italy

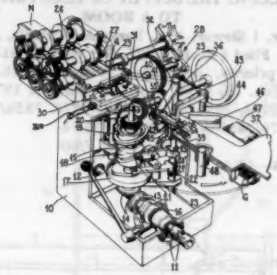
Filed Nov. 8, 1974, Ser. No. 522,457
Claims priority, application Italy, Dec. 20, 1973, 3543/73
Int. Cl.² B31B *1/16, 1/52*
U.S. Cl. 93—36.01 **10 Claims**

1. Apparatus for supplying understrips of hinge lid packets to a cigarette wrapping machine, comprising;

a conveyor having mutually spaced compartments, each receptive of an understrip to be combined with a body of a hinge lid packet, the conveyor being operable to move successive ones of said compartments thereof in a plane, into a predetermined waiting position in said plane, adjacent an area of production of successive flat understrip blanks, and subsequently away from said position for use in a cigarette wrapping machine;

a stationary plate structure overlying a portion of the conveyor corresponding to said position and having an aperture substantially coextensive with one of said compartments;

an arm extending in a plane parallel to that of the conveyor and swingable in its plane to individually transfer the successive flat understrip blanks from the area of production thereof toward said adjacent position, one for each compartment;



means for moving the arm transversely of said planes to move each of the successive, transferred blanks into a respective one of said compartments; and

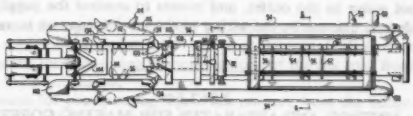
means in said aperture in the plate structure for cooperating with the arm in shaping each understrip blank, while it is moved into and at least partly through said aperature, to provide a U-shaped understrip insertable in said body.

3,967,544

GROCERY SACK PROCESS AND MACHINE

Herbert Brock, Sheboygan; Glenroy G. Blatz, Kiel, both of Wis., and James B. Honn, Arcola, Ill., assignors to National Petro Chemicals Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 413,014, Nov. 5, 1973, abandoned. This application Oct. 3, 1974, Ser. No. 511,836
Claims priority, application United Kingdom, May 1, 1973, 20676/73
Int. Cl.² B31B *33/26*
U.S. Cl. 93—35 SB **21 Claims**



21. A process of automatically and continuously making folded bottom gusseted grocery sacks at high speed from a travelling web of gusseted thermoplastic film, the process comprising:

a. controllably feeding the web to a sealing zone;

b. continuously sealing the moving web across the width of the web while heating it, the speed of the moving web during sealing being slightly less than the feeding speed so the seals are not torn apart;

c. cutting the web transversely in synchronism with and adjacent the seals to create individual sacks;

d. moving the individual sacks at the speed of the web though airing opening, bottom folding, and deairing zones;

e. blowing a controlled amount of air into the individual sacks as they move through the airing zone to open the sacks;

f. folding the bottom of the individual sacks as they move through the folding zone by gripping the upper side of the sack gusset and moving it at a slower speed from the bottom sack gusset;

g. removing the air from the individual rough folded bottom sacks as they move through the deairing zone;
h. taking away the individual folded bottom sacks from the deairing zone and simultaneously pressing the fold therein.

3,967,545

CONTROLLING THE SUPPLY OF ELECTRIC CURRENT TO A ROOM

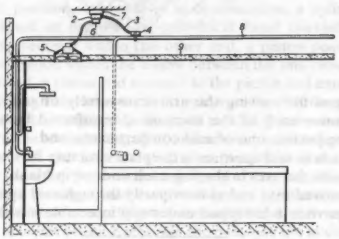
John Baker, 1 Stewart Ave., Parkdale, Victoria, Australia

Filed Feb. 10, 1975, Ser. No. 548,613

Claims priority, application Australia, Feb. 14, 1974, 6599/74; Feb. 18, 1974, 6638/74; Mar. 22, 1974, 6992/74; Mar. 27, 1974, 7056/74; May 14, 1974, 7556/74; May 31, 1974, 69678/74; Nov. 7, 1974, 9530/74

Int. Cl.² F24F 7/00

U.S. Cl. 98—43 A 17 Claims



7. An installation comprising electrical power supply wiring connected to an electrically powered fan disposed in a room, a water supply pipe having a water outlet in the room, and means to control the supply of electric current by the wiring to the electrical fan in response to variations in the temperature of the water supply pipe.

17. An installation comprising electrical power supply wiring connected to an electrically powered steam exhaust fan mounted in a wall of a room, a water supply pipe having a water outlet in the room, the pipe being connected to supply hot water to the outlet, and means to control the supply of electric current by the wiring to the fan in response to variations in the temperature of the water supply pipe.

3,967,546

METHOD AND APPARATUS FOR MAKING COFFEE

Serge Cailliot, 38, Rue du Bois de Boulogne, 92200 Neuilly-sur-Seine, France

Filed June 27, 1974, Ser. No. 483,516

Claims priority, application France, July 9, 1973, 73.25085; May 30, 1974, 74.18815

Int. Cl.² A47J 31/00

U.S. Cl. 99—286 7 Claims

1. In a device for infusing ground coffee into hot water at a temperture near its boiling point by utilizing centrifugal force, said device comprising

a shaft mounted to rotate about a substantially vertical axis,

a centrifugal chamber adapted to receive ground coffee and hot water, said chamber being defined by coaxial upper and lower members, said upper members having a frusto-conical peripheral portion, and said members having registering peripheral edges which define a gap when separated and being slidably mounted on said shaft for vertical movement between locations maintaining said chamber in upper and lower positions,

means for rotating said shaft and means for rotatably driving at least said lower member from said shaft,

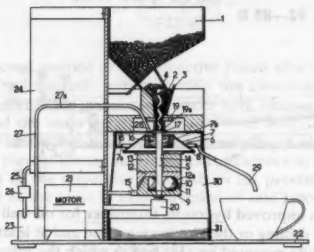
means for feeding ground coffee and water to said chamber,

an annular collecting gutter encircling said chamber when said chamber is in said upper position,

a grounds collecting tank in communication with said chamber through said gap when said chamber is in said lower position, and

means for moving said chamber between said upper and lower positions,

the improvement which comprises resilient means urging said upper member downwardly and thus biasing said chamber toward said lower position, said resilient means being compressed when said chamber is in its upper position so as to exert its maximum downward pressure on said upper member, but expanded when said chamber is in its lower position so as to exert a smaller downward pressure on said upper member,



at least the peripheral portion of one of said chamber-defining members being made of a material which deforms sufficiently in response to the pressure exerted thereon by the contents of said chamber, when said lower member is rotated with said chamber in its upper position and ground coffee and water therein, to open a gap between said peripheral edges wide enough to permit the passage of liquid coffee therethrough, but too narrow to pass grounds,

while the smaller force exerted by said resilient member on said upper member when said chamber is in said lower position permits a larger gap through which said grounds may escape to be opened between said peripheral edges in response to said pressure when said chamber is rotated in said lower position.

3,967,547

APPARATUS FOR COOKING AND SMOKING FOOD

James Max Sykes, and Velma T. Sykes, both of 3227 Bullard St., Paducah, Ky. 42001

Continuation of Ser. No. 478,413, June 11, 1974, abandoned.

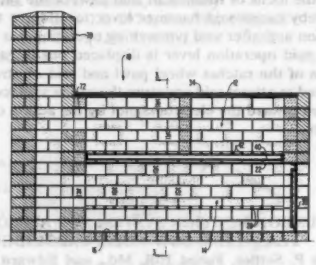
This application Nov. 14, 1975, Ser. No. 632,122

Int. Cl.² A47J 27/00

U.S. Cl. 99—421 H 4 Claims

1. In a barbecue pit of the type including a cooking chamber and a separate fire chamber located below the cooking chamber with the two chambers being interconnected for the passage of heat, air and smoke from the fire chamber to the cooking chamber, and a flue for permitting the escape of gases from the pit, the improvement comprising outer masonry walls defining the side walls and end walls of the barbecue pit, top and bottom walls cooperating with said outer masonry walls to define the interior of said pit, inner masonry walls spaced from said outer side walls, said inner walls extending to said end walls and defining the side walls of said fire chamber and said cooking chamber, a generally horizontal partition wall extending between said end walls and said inner walls separating said fire box and said cooking chamber, a plurality of openings in said inner walls providing communication between said fire chamber and the space between said inner and said outer walls and communication between said space and said cooking chamber, said openings and said space defining duct means

connecting said fire chamber and said cooking chamber, adjustable damper means in said duct means for controlling the flow of hot gases from said fire chamber to said cooking chamber, vent means directly connecting said fire chamber to



said flue and second vent means directly connecting said cooking chamber to said flue, at least one fire door leading through said masonry walls into said fire chamber, and at least one access door leading through said walls into said cooking chamber.

3,967,548

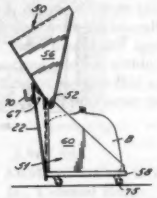
WASTE COMPACTOR

Dario J. Moriconi, Bloomfield Hills, Mich., assignor to McClain Industries Inc., Utica, Mich.

Continuation of Ser. No. 422,422, Dec. 6, 1973, abandoned. This application Aug. 25, 1975, Ser. No. 607,132

Int. Cl.² B30B *15/32*

U.S. Cl. 100—229 A **7 Claims**



1. In a waste compactor, the combination comprising
a frame,
a cart associated with said frame,
a compactor member mounted on said frame for movement toward and away from said cart,
said cart being removable from said frame,
said cart comprising two sections,
said sections when in one position defining a bottom wall, side walls, and end walls having an open end for receiving a disposable waste container,
one of said sections comprising an end wall and side wall portions,
and the other of said sections comprising said bottom wall, the other end wall fixed to said bottom wall, and side wall portions fixed to said bottom wall,
said other end wall cooperating with said frame to form the front of said compactor,
said sections being pivoted to one another about a horizontal axis adjacent the upper end of said other end wall of said other section,
said cart being removable from said frame such that said one section may be pivoted about said horizontal axis upwardly to move its said end wall out of position whereby the disposable container can be removed by horizontal movement off of said bottom wall.

3,967,549

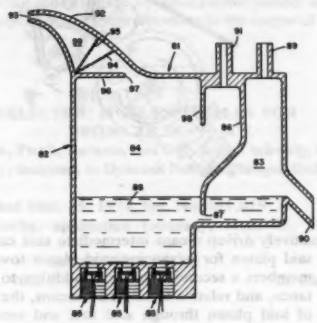
INK SUPPLY SYSTEM FOR AN INK MIST PRINTER

Lester E. Thompson, Los Altos; Enrique J. Klein, Menlo Park, and Myron E. Lee, Palo Alto, all of Calif., assignors to Electroprint, Inc., Cupertino, Calif.

Filed May 11, 1973, Ser. No. 359,286

Int. Cl.² G03G *13/06*

U.S. Cl. 101—1 **10 Claims**



1. Apparatus for delivering a mist of liquid ink mixture to the print region of a print head, and for recovering and recycling unused portions of the mist comprising:
a tank adapted to hold a supply of a liquid ink mixture of ink and solvent;
means for supplying carrier gas;
means for generating a mist of the liquid ink mixture, said generating means having an outlet positioned to deliver the mist to the print region, inlet means for receiving the liquid ink mixture from said tank and for receiving a carrier gas from said carrier gas supply means, means for holding a quantity of liquid ink mixture, means for agitating the liquid ink mixture in said ink holding means to produce droplets of the liquid ink mixture above the surface of liquid in said ink holding means where the droplets become entrained in the carrier gas to form the mist;
means for carrying the liquid ink mixture from said tank to said inlet means;
means for recovering unused portions of the ink mist from the print region;
means for precipitating liquid ink mixture from the recovered mist and for returning the precipitated liquid ink mixture to said tank; and
means for monitoring the density of ink mixture carried to said generating means and for adding density monitor controlled quantities of ink mixture constituents to said tank to adjust the density of the mixture consistency.

3,967,550

SQUEEZE PRINTER FOR PAPERS OR STACKS OF PAPERS OF VARYING THICKNESSES

Richard E. Busch, La Puente, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed July 25, 1974, Ser. No. 491,871

Int. Cl.² B41J *1/22*

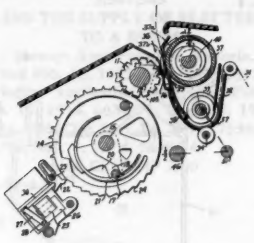
U.S. Cl. 101—93.18 **9 Claims**

1. A data printer comprising
type members,
type characters on said members,
means for differentially setting said type members to position different ones of said type characters at a printing station,
a printing platen,

means for guiding a record medium intermediate said type members and said platen,

cam means for advancing said platen towards said type members a first distance,

yieldable drive means for actuating said cam means to advance said platen toward said type members to engage said record medium, and



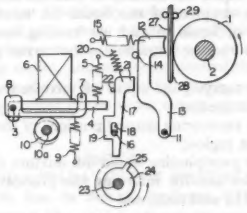
positively driven means intermediate said cam means and said platen for advancing said platen toward said type members a second distance in addition to said first distance, and relative to said cam means, the advancement of said platen through said first and second distances causing a printing impression of said record medium against said type characters at said printing station.

3,967,551

PRINT MECHANISM WITH ROCKABLE INTERPOSING LEVER FOR PRINT HAMMER

Toru Matsubara, Chofu, and Toshikazu Nakano, Fuchu, both of Japan, assignors to Tokyo Juki Kogyo Kabushiki Kaisha, Chofu, Japan

Filed July 21, 1975, Ser. No. 597,817
Claims priority, application Japan, July 31, 1974, 49-88236
Int. Cl.² B41J 9/10, 9/26
U.S. Cl. 101—93.31 **4 Claims**



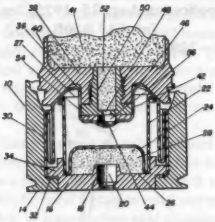
1. A typewriting device comprising a type-carrying drum continuously driven from a drive source, at least one ratchet wheel continuously driven from said drive source in synchronization with said type-carrying drum and having a pawl in the outer periphery, at least one operation lever mounted on a shaft in opposition to said ratchet wheel for rotation about and movement vertically along said shaft, at least one hammer lever pivoted to a second shaft between said drum and operation lever and normally held away from said drum, said hammer lever being adapted to strike against said drum in response to the operation of said operation lever for effecting a typewriting operation, at least one armature pivoted to a third shaft for engaging and disengaging from said operation lever, at least one electromagnet disposed in opposition to said armature for attracting said armature to said electromagnet when the electromagnet is energized, a rocking lever pivoted to said third shaft for assisting said electromagnet in attracting said armature when the electromagnet is energized and for separating the armature from the electromagnet when the electromagnet is deenergized, and at least one intermittently rotatable cam member disposed in contact with said rocking lever, whereby when said electromagnet is deenergized, said armature is separated from said electromagnet with the assistance of said rocking lever to position said operation lever within the locus of rotation of said pawl of the ratchet wheel to thereby cause said hammer lever to effect a typewriting operation and after said typewriting operation has been completed, said operation lever is displaced out of said locus of rotation of the ratchet wheel pawl and said electromagnet is energized to attract said armature thereto as said rocking lever is moved toward the electromagnet by the action of said cam member.

3,967,552

PERCUSSION IGNITION SYSTEM FOR A SMOKELESS, FLASHLESS, LOW NOISE CARTRIDGE

Charles P. Settles, Forest Hill, Md., and Edward R. Evans, Sicklerville, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1974, Ser. No. 533,438
Int. Cl.² F42B 5/10
U.S. Cl. 102—38 **5 Claims**



1. A percussion ignition system for a closed combustion cartridge which comprises:

a cartridge case having a forward open end and a rear end;

a base fixedly positioned in the rear end of said case, said base having an axial bore therein and an annular cavity which communicates with said axial bore;

a cartridge impact primer fixedly positioned in said axial bore;

a round slidably positioned in said case;

delay means, axially positioned in the rear end of said round, for actuating said round after said round is expelled from said case;

sealed telescoping means, positioned in said case intermediate said base and the rear end of said round, for propelling said round out of said case toward a target without evidence of smoke or flash;

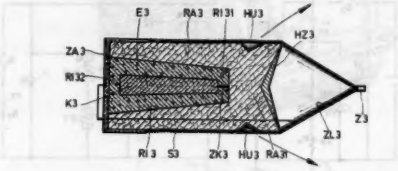
ignition means, positioned intermediate said telescoping means and said delay means, for initiating said delay means when said round is being propelled from said case; and

propelling means, slidably positioned in the annular cavity of said base, for generating gases which rapidly expand said telescoping means and for impacting against said telescoping means to activate said ignition means.

3,967,553
FLAMMABILITY PROMOTING AMMUNITION FOR USE AGAINST AIRBORNE TARGETS

Roman Keraus, Purten; Gerhard Schulz, Frasshausen; Caspar von Munchhofen, Oberhaching, and Heinrich Hofmann, Grobenzell, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed July 23, 1974, Ser. No. 491,165
Int. Cl.² F42B *13/12, 13/14, 13/18*
U.S. Cl. 102—66 **11 Claims**

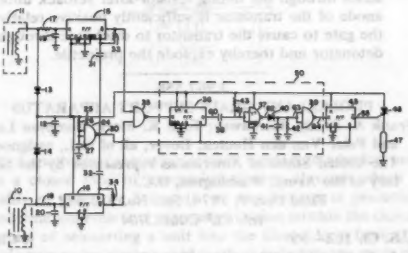


1. A round of ammunition, particularly for use against airborne targets, such as aircraft and similar targets, said round of ammunition comprising a casing capable of fragmenting into splinters, explosive material in the form of at least one explosive charge located within and capable of fragmenting said casing, oxygen for reaction with fuel or other combustible materials in the target, and material for supporting the flammability of combustible material located on or in the target, wherein the improvement comprises that said casing has a shaped head portion and an axially extending cylindrically shaped portion extending axially rearwardly from said head portion, a core of explosive material located within and extending in the axial direction of the cylindrically shaped portion of said casing, an inner ring-shaped body of oxygen releasing material laterally disposed about said core, an outer ring-shaped body of explosive material laterally enclosing said inner ring-shaped body, first means for igniting said outer ring-shaped body and second means within said casing for providing a delayed ignition of at least said core of explosive material relative to the ignition of said outer ring-shaped body.

3,967,554
SAFETY AND ARMING DEVICE TIMER

David Emanuel Troyer, Jr., Colonial Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 21, 1975, Ser. No. 597,733
Int. Cl.² F42C *11/06*
U.S. Cl. 102—70.2 R **3 Claims**



1. A safety and arming device for a guided projectile to provide for safe separation of the projectile from the gun before arming comprising:

means mounted on said projectile inductively inducing a plurality of voltage pulses as the projectile is fired from a gun;

a safety and arming coincidence circuit responsive to coinciding voltage pulses produced by the induction means;

a flip-flop responsive to the output of said coincidence circuit;

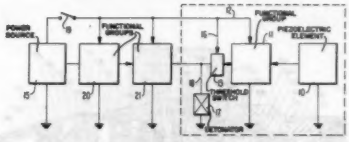
a compensated monostable multivibrator driven by said flip-flop, said flip-flop and said multivibrator operating as an electronic timer wherein the output of said coincidence circuit is delayed for a predetermined period; and

means for arming a warhead responsive to the output of said timer.

3,967,555
PIEZOELECTRIC FUZE, ESPECIALLY FOR PROJECTILES

Heinz Gawlick, Furth, Bavaria, and Uwe Brede, Schwaig, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Mar. 15, 1974, Ser. No. 451,675
Claims priority, application Germany, Mar. 15, 1973, 2312793
Int. Cl.² F42C *11/02*
U.S. Cl. 102—70.2 GA **22 Claims**



1. A piezoelectric fuze, especially for projectiles, comprising power source means, detonator means, threshold switch means having a threshold value, piezoelectric element means for converting the mechanical shock wave produced upon impingement of the fuze onto a target into an electrical output signal for at least aiding in overcoming the threshold value of the threshold switch means, and at least a first control means for controlling the ignition of said detonator means, said first control means providing an electrical output signal for overcoming the threshold value of the threshold switch means, said threshold switch means being responsive to the output signals of said piezoelectric means and said first control means for establishing a connection between said power source means and said detonator means for igniting said detonator means when the threshold value thereof is exceeded.

3,967,556
PNEUMATIC FUZE FOR SAFING AND ARMING MISSILES

Lloyd D. Post, Mount Fern; William J. Holley, Sparta, both of N.J.; William K. Clark, and Fredrick R. Hayward, both of Wilmington, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1975, Ser. No. 563,766
Int. Cl.² F42C *5/00, 11/02, 15/40*
U.S. Cl. 102—70.2 GA **7 Claims**

1. A pneumatic point detonating fuze for safing and arming a projectile which comprises:

a cup-shaped rear body housing having a partially closed rear end, a front open end, a plurality of progressively sized axially aligned rear body housing counterbores extending from said closed rear end toward said front open end, and a plurality of longitudinally positioned lead explosive bores, said lead bores communicating with said rear body counterbores and exiting from said rear end;

a plurality of lead explosive charges longitudinally positioned in the lead bores of said rear body housing;

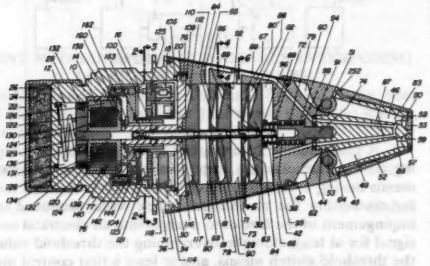
a booster explosive means fixedly attached to said partially closed end of said rear body housing;

an ogival front body housing having a rear end section fixedly positioned concentric with and adjacent to said front open end of said rear body housing, a tapered forward section, an axial piston counterbore located in said rear end section having a plurality of annular notched partition grooves therein, an axial guide counterbore communicating with said piston counterbore, an axial nose counterbore located in said tapered forward section and communicating with said guide counterbore, and a plurality of high and low pressure channels pneumatically connecting said nose counterbore with said piston counterbore;

body cover means for fixedly holding said front body housing attached to said rear body housing;

torsionally biased rotary arming means for holding said fuze in a "safe" unarmed condition when said fuze has not been subjected to a proper launch environment, and for placing said fuze in an "armed" condition when said fuze has received a proper launch environment;

biased setback generator-detent-delay means, positioned in said rear body housing counterbores, for providing electrical energy to said arming means, for preventing said arming means from rotating when said fuze in said "safe" condition, and for controllably delaying the redetenting of said arming means for a first interval of time after said fuze has been subjected to said launch environment;



pneumatic piston detent means, slidably positioned in the piston counterbore of said front body housing, for detenting said rotary arming means until said projectile has obtained a proper velocity and for permitting said rotary arming means to rotate and place said fuze in said armed condition when said projectile has seen said proper velocity; and

venturi nozzle sensing means for detecting said projectile air velocity and for directing high and low pressure air through said high and low pressure channels into said piston counterbore, wherein the difference in pressure across said piston detent means causes forward translation of said piston detent means and the release of said torsionally biased rotary arming means; and

a plurality of piezoelectric graze and impact sensors, operatively positioned in the nose end of said nozzle sensing means, are electrically connected to a triggering circuit energized by said generator-detent-delay means when said fuze is in said armed condition, said graze and impact sensors activating said triggering circuit and causing said fuze to detonate upon impact with a target.

3,967,557

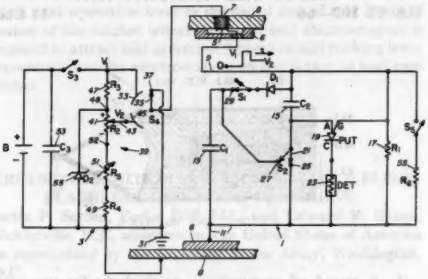
ADJUSTABLE ELECTRICAL TIME DELAY FUZE

Charles G. Irish, Jr., Port Tobacco, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1975, Ser. No. 543,287

Int. Cl.² F42C 11/06

U.S. Cl. 102—70.2 R **10 Claims**



1. In a system comprising a gun and an explosive projectile launched therefrom, delay fuze means for exploding said projectile during flight at a predetermined time after launch, including a firing circuit carried by said projectile, said firing circuit comprising:

first and second input terminals;

a first capacitor, and means connecting said first terminal, through a blocking diode and an initially-closed setback-actuated single-pole-single throw first switch and said capacitor, to said second terminal;

a second capacitor, and means connecting said first terminal, prior to setback, through said second capacitor and one path of a setback-actuated single-pole-double throw second switch, to said second terminal;

a timing resistor connected in parallel with said terminals;

a detonator for exploding the projectile;

a programmable unijunction transistor including an anode, a gate and a cathode and having its anode connected to the junction of said second capacitor and said second switch, its gate connected to said first terminal and its cathode connected, through said detonator, to said second terminal; and

means connecting said transistor anode to the junction of said first switch and said first capacitor, through the other path of said second switch, when the latter is actuated by setback;

whereby the two capacitors can be charged to two different voltages prior to setback by supplying the two voltages successively to the two terminals, and will discharge in series through the timing resistor after setback until the anode of the transistor is sufficiently positive relative to the gate to cause the transistor to discharge through the detonator and thereby explode the projectile.

3,967,558

PROPELLANT GRAIN SUPPORT APPARATUS

Frank A. Brody, Rockaway; Emil K. Merz, Pompton Lakes, and Peter Van den Houten, Dover, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1974, Ser. No. 530,892

Int. Cl.² C06D 5/04

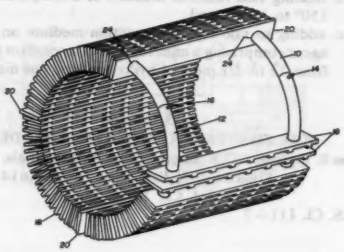
U.S. Cl. 102—99 **4 Claims**

1. A propellant grain support apparatus which comprises:

a plurality of channeled propellant grain strips having a plurality of holes therethrough;

a plurality of longitudinally equally spaced support blocks positioned intermediate said grain strips, said support blocks having a plurality of holes therethrough which are axially aligned with the holes of said grain strips;

a plurality of split interlocking support rings which pass through the holes of said grain strips and said support blocks, wherein said rings, blocks and strips form a cylindrically shaped propellant charge assembly which after



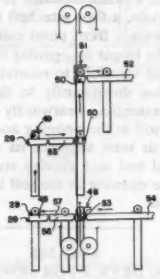
being placed in the combustion chamber of a recoilless rifle maintains a radial orientation during firing to achieve simultaneous ignition of propellant surfaces, controlled interior ballistics and controlled gas porting.

3,967,559

APPARATUS FOR REMOVING MAGAZINES FROM A CLOSED LOOP OF CONTINUOUSLY INDEXED MAGAZINES AND REINSERTING THE MAGAZINES INTO THE LOOP

Charles H. Johnson, and Edward A. Wallace, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

Filed Mar. 11, 1975, Ser. No. 557,257
Int. Cl.² B61J *3/00*
U.S. Cl. 104—88 **19 Claims**



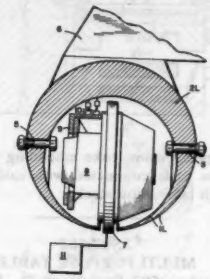
19. A method of removing a track supported wheeled unit from a closed loop of processing stations through which a plurality of units are being driven step-by-step at predetermined time intervals to a processing station outside the closed loop and of reinserting a unit into the closed loop from the outside processing station, said method including the steps of: transferring a unit from the closed loop to said outside processing station, transferring a unit from said outside processing station to an elevator means, driving said elevator means to a given point along the closed loop, and transferring the unit from said elevator means into said closed loop.

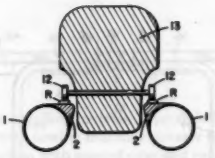
3,967,560

BENDING BEAM AND METHOD OF MAKING SAME

Michael Simon, Munich, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Germany

Filed Apr. 3, 1974, Ser. No. 457,499
Claims priority, application Germany, Apr. 3, 1973, 2316462
Int. Cl.² E04C *3/293*; E01B *25/22*; B61B *3/00*, *5/00*
U.S. Cl. 104—94 **24 Claims**





1. Bending rail guiding arrangement for an elevated train vehicle comprising: a bending guide rail formed from an integral metal structural girder, and a plurality of non-metal structural girders connected to said metal girder, said plurality of non-metal girders being constructed from concrete and disposed in a series arranged manner to reinforce those portions of the metal girder subject to compressive forces and buckling stress during use of the rail guiding arrangement, said non-metal girders exhibiting an outwardly facing contact surface for accepting loads on the beam arrangement; and train guiding means mounted on said bending guide rail.

3,967,561

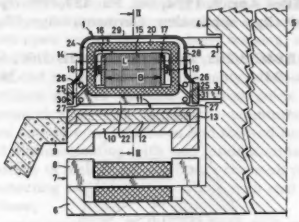
LINEAR-INDUCTION MOTOR ESPECIALLY FOR HIGH-SPEED SUSPENSION VEHICLES

Peter Schwärzler, Furstenfeldbruck, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Feb. 3, 1975, Ser. No. 546,748
Claims priority, application Germany, Feb. 5, 1974, 2405309
Int. Cl.² B61B *13/08*; H02K *41/04*
U.S. Cl. 104—148 LM **9 Claims**

1. A linear-induction motor comprising a flat reaction rail and a stator shiftable along said rail magnetically cooperating therewith, said stator comprising an elongated stator core including a stack of core laminations lying in planes parallel to the direction of movement of said stator transversely to the plane of said rail, a plurality of annular stator coils surrounding said stator core and spaced apart thereon in said direction, and a plurality of elongated comb lamination stacks lying against said stator core between said coils and juxtaposed with said reaction rail, said comb lamination stacks having lengths exceeding the width of said stator core in juxtaposition with said rail and being formed with laminations lying in planes

perpendicular to said direction and to said rail, each of said comb lamination stacks having portions projecting laterally beyond said stator core, said motor further comprising a respective U-shaped tension yoke extending around said core and having free ends connected with said portions of the respective comb lamination stack.

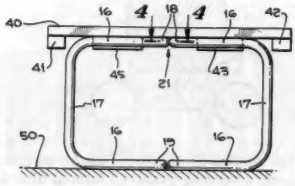


3,967,562

MULTI PURPOSE TABLE

Charles D. Anacker, 502 Frenchman St., New Orleans, La. 70116

Filed Nov. 27, 1974, Ser. No. 527,824
Int. Cl.² A47B 9/00, 85/00
U.S. Cl. 108—12 8 Claims



1. In a multi purpose table, the combination comprising
a. two like, symmetrical frame sections having hinged interconnection, so that the sections are relatively swingable between two alternate positions, said sections comprising tubular stretches,
b. and means including a table top alternatively interfitting said sections in each of said positions thereof and characterized in that said sections support said table top at different elevations in said alternate positions,
c. each section including two longitudinal stretches and two U-shaped stretches each defined by two lateral stretches and a cross-piece stretch interconnecting the two lateral stretches, the two lateral stretches merging with adjacent ends of the two longitudinal stretches, the cross-piece stretches defining a common plane in a first of said two positions, and defining two longitudinally spaced parallel planes in a second of said two positions.

3,967,563

PROCESS FOR PRODUCING PRECIPITATED THICKENER SILICA

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 402,927, Oct. 3, 1973. This application Aug. 20, 1975, Ser. No. 606,035
Int. Cl.² C09C 1/28
U.S. Cl. 106—288 B 6 Claims

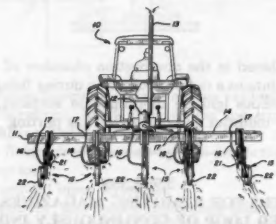
1. A method for producing a unique, amorphous, precipitated silica having very high structure, wet cake moisture in excess of 85%, an oil absorption in excess of 200 cc/100g., a surface area in excess of 250 m^2/g, and having improved chemical and physical properties, said method comprising the steps of:
a. providing an aqueous reaction medium containing 10–20% by weight of an alkali metal silicate, said alkali metal silicate having an SiO_2/M_2O weight ratio, x, ranging from 1.0 to 4.0, where M is an alkali metal;
b. heating said reaction medium at a temperature of from 150° to 170°F; and
c. adding to said aqueous reaction medium an acidulating agent comprising a mineral acid at a constant rate ranging from $1x$ to $2/x$ mols of hydrogen ions per minute.

3,967,564

SOIL SHATTERING AND AERATING DEVICE

Leo B. Emling, 477 E. Eugene Drive, Bourbonnais, Ill. 60914

Filed Mar. 3, 1975, Ser. No. 554,614
Int. Cl.² A01C 23/00
U.S. Cl. 111—7 3 Claims



1. A soil shattering device providing forced aeration for the shattered soil comprising a farm tractor having a power takeoff and a tool bar support, an air intake pipe extending high above the ground, a manifold and a pump positioned on said support, said pump operated by the power takeoff for forcing air from the atmosphere into said pipe and down to said manifold, a plurality of aeration gangs spacedly attached to and pulled by said tractor, each of said gangs having a horizontal arm, a rolling coulter rotatably mounted on the front portion of said arm, and a depth cover wheel mounted on the rear portion of said arm, a shank attached to and extending downwardly from said arm, a foot attached to the bottom end of said shank and having a front point extending forwardly and slightly downwardly to cut an opening in the soil, an air tube extending from said manifold to receive forced air from said pipe, and extending downwardly to the lower end of said shank, and then extending rearwardly as a shatter tube to force air into the soil at the opening and an enlarged swedge attached to said air tube adjacent its open outer end, said depth cover wheel and said swedge cooperating to act as a means to close the opening in the soil to prevent fast escape of air from the soil.

3,967,565

CLOTH FEEDING DEVICE FOR SEWING MACHINE AND METHOD THEREOF

Tetsuro Hirayama, Chofu; Kousuke Yuyama, and Yoshihiko Matsuura, both of Tokyo, all of Japan, assignors to Juki Co., Ltd., Tokyo, Japan

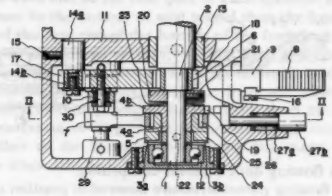
Filed Feb. 20, 1975, Ser. No. 551,427
Int. Cl.² D05B 27/08
U.S. Cl. 112—208 5 Claims

1. A cloth feeding device for a sewing machine, comprising:
a. a main shaft,
b. a vertically feeding cam fixed to the main shaft,
c. a driving means fixed to the main shaft,
d. a flanged cam frictionally mounted on the main shaft, and being engageable with an external adjusting means,
e. an outer regulating ring having an eccentric inner peripheral surface externally fitted to the outer peripheral sur-

face of the flanged cam, the flanged cam and the ring cooperating to define a double cam, the ring engaging and being driven by the drive means,

f. a cam holding piece embracing the vertically feeding cam,

g. a horizontally feeding arm connected to the ring,



h. a cloth feeding arm having a cloth feeding dog carried by the cam holding piece and being movable with the vertically feeding cam,

i. a pivotally mounted rocker arm, the rocker arm rocking oscillatorily and engaging the cloth feeding arm, and

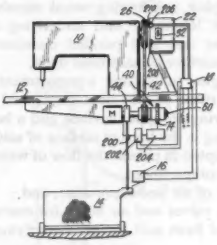
wherein the horizontally feeding arm is pivoted to the intermediate part of the rocker arm along the longitudinal axis thereof.

3,967,566

SEWING MACHINE ATTACHMENT

Murray Spiegel, 5724 Davies, Cote-St.-Luc, Montreal, and Mitchell Spiegel, 374 Andras Drive, Dollad-des-Ormeaux, Quebec, both of Canada

Filed Aug. 21, 1974, Ser. No. 499,136
Int. Cl.² D05B *69/26*
U.S. Cl. 112—219 A **7 Claims**



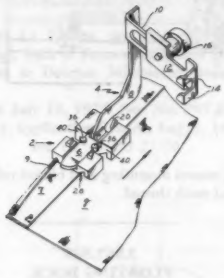
1. A control device for use with a motor driven element in a sewing machine or the like, and comprising an auxiliary motor, a clutch mechanism, a main motor having a drive shaft for driving said element through said clutch mechanism, means to disengage said clutch mechanism from said driven element and to activate said auxiliary motor, said auxiliary motor continuing the drive of said driven element after said main motor drive has been disengaged through said clutching mechanism, means indicating a predetermined position where said driven element is to be stopped, sensing means for sensing said means to indicate a position, a floating brake coupling having a movable plate connected to said drive shaft, means to disconnect said auxiliary motor and to magnetically move said movable plate to brake the drive of said driven element in response to said sensing means and within one complete cycle of operation of said element and substantially at said predetermined position.

3,967,567

UNITARY ADAPTOR FOR PRESSER FOOT ATTACHMENT

John A. Yurkunas, Jr., Ware, and Rhea C. Lathe, Warren, both of Mass., assignors to Wm. E. Wright Co., West Warren, Mass.

Filed Mar. 7, 1975, Ser. No. 556,383
Int. Cl.² D05B *29/00*
U.S. Cl. 112—240 **4 Claims**



1. Adaptor for installing invisible type slide fasteners for use in combination with sewing machine presser foot attachments having a foot portion with spaced opposed recesses in the side edges thereof for accommodating reciprocable movement of a sewing machine needle when installing slide fasteners of non-invisible type without said adaptor, said adaptor being integrally formed of a resilient material and having a pair of laterally spaced, longitudinally extending, downwardly opening guide channels for receiving and guiding the coupling element chain of a slide fastener, said channel including an inclined surface engageable with the coupling chain to orient the same upright with respect to the tape of the slide fastener, and retaining means comprising laterally spaced post members extending upwardly from the adaptor and being laterally spaced apart a distance less than the distance between said opposed recesses, said post members having a cross sectional configuration to fit within said spaced opposed recesses in the side edges of said foot and being deflected apart or releasably fitting into said recesses and thereby resiliently gripping said presser foot to retain said adaptor in fixed position on said attachment.

3,967,568

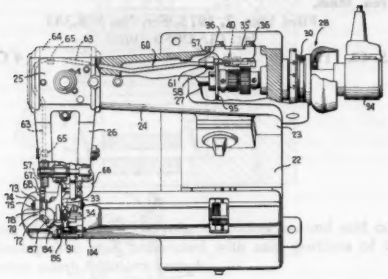
THREAD CUTTER FOR BLINDSTITCH SEWING MACHINE

Paul E. Steckenrider, Hoffman Estates, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed May 31, 1974, Ser. No. 475,163
Int. Cl.² D05B *65/02*
U.S. Cl. 112—252 **17 Claims**

1. A thread cutting attachment for use in combination with a single thread blindstitch sewing machine of the type having a needle, a looper and a presser foot with the looper being of the type for isolating a portion of a thread for freedom of access thereto, said thread cutting attachment comprising a pair of blades, means interconnecting said blades for cooperative movement in unison and in opposite directions relative to

an isolated thread portion in a true scissor action with both blades moving towards the isolated thread portion to sever it,



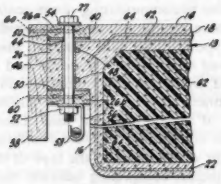
and mounting means mounting said blades relative to a sewing machine to cut such thread.

3,967,569

FLOATING DOCK

Myron L. Shorter, Jr., 81 Calypso Shores, Ignacio, Calif. 94947

Filed Dec. 30, 1974, Ser. No. 537,602
Int. Cl.² B63B *35/38*
U.S. Cl. 114—.5 F 12 Claims



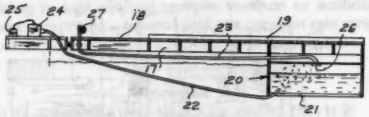
11. A float structure comprising: a plurality of adjacently arranged interconnected float units, each float unit comprising an enclosed, substantially rectangular shell structure with opposed sides with sidewalls and ends with end walls, a top and a bottom; a means of interconnecting said float units, comprising flange structures on said float units having a portion of said sidewalls horizontally projecting from said sidewalls and extending the length of said sidewalls, said flange structures having a horizontal top mounting surface and a horizontal bottom mounting surface spaced from said top surface, connection members for connecting at least two of said float units together with ends abutting, said connection members comprising upper stringers mounted against said top mounting surface of said flange structures and lower stringers mounted against said bottom mounting surface of said flange structures, said stringers extending longitudinally along at least a portion of the flange structures of at least two adjacent float units and fastening means including rod elements each vertically extending through said flange structures between said top mounting surface and said bottom mounting surface and through the upper and lower stringers for securing said upper stringers, said flange structures and said lower stringers together in compression.

3,967,570

FLOATING DOCK BOAT LIFT

C. C. Bradfield, 175 E. Elmview, San Antonio, Tex. 78209

Continuation-in-part of Ser. No. 455,128, March 27, 1975, abandoned. This application July 7, 1975, Ser. No. 593,329
Int. Cl.² B63C *1/06*
U.S. Cl. 114—45 6 Claims



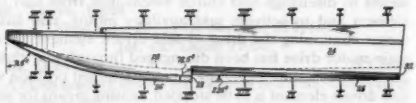
1. A floating dock boat lift comprising:
a. a floating parent structure moored in position on a body of water, said structure including a substantially planar upper surface,
b. multiple hinges operably secured to said parent structure, said parent structure having a length and width greater than a boat dock attached thereto,
c. said boat deck including a substantially planar upper surface and bottom surface operably secured to said multiple hinges in such a manner as to secure said boat deck's upper surface co-planar with said parent structure's upper surface, said boat deck having a length and width greater than the boat to be lifted by the said boat deck,
d. a keel brace securely affixed to said boat deck's upper surface, said keel brace further comprising:
1. two elongated spaced substantially parallel members secured to the upper surface of the said boat deck adapted to receive and support the keel of a boat and support said boat in an upright position,
2. an underlying, reinforcing wood member secured to the under surface of said boat deck extending between and in a parallel plane to said elongated spaced parallel members,
3. a metal reinforcing member securely affixed to said underlying, reinforcing wood member and projecting for the length of said underlying reinforcing wood member and said parallel members secured to the upper surface of said boat deck,
e. an airtight, underlying compartment attached to the under surface of said boat deck, said airtight compartment having an upper surface and a bottom surface,
f. an opening in the bottom surface of said airtight compartment adapted to permit the flow of water to and from said airtight compartment,
g. a source of air under pressure, and
h. multiple valves and air hoses for controlling the flow of air to and from said airtight underlying compartment.

3,967,571

FOUR-POINT TUNNEL HULL FOR A BOAT

Melvin E. Mut, 5225 Adams Ave., Baton Rouge, La. 70806

Filed Mar. 13, 1975, Ser. No. 558,151
Int. Cl.² B63B *1/20*
U.S. Cl. 114—66.5 S 9 Claims



1. In a boat hull of the type comprising two longitudinally extending, downwardly projecting sponsons having inner walls defining therebetween a longitudinal tunnel, said hull being designed to "plane" at a predetermined operating speed, the improvement according to which the lowermost surface of

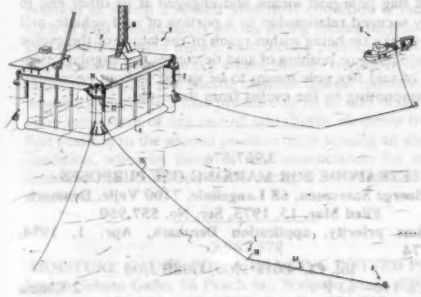
each sponson slopes upwardly and outwardly for at least the greater portion of its length and each sponson is interrupted forwardly of the center of said boat by a step extending in a direction having a vertical component and dividing said sponson into front and rear parts, with the bottom of the front part of each sponson lying at an angle of less than 90° with respect to the inner wall of the same sponson, and the entire bottom of the forward end of the rear part of each sponson substantially closer to the bottom of said tunnel than the lowermost portion of the rear end of the bottom of the front part of said sponson, while the rear ends of both the front and rear parts of said sponson lie at about the same distance below said tunnel bottom, said tunnel being free from any obstruction substantially inhibiting and said step being deep enough to permit transverse venting of the full width of said tunnel beneath either of the forward ends of the rear parts of said sponsons when said boat is planing.

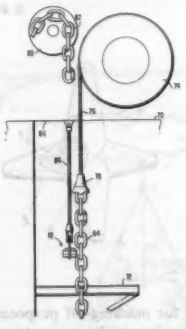
3,967,572

ANCHORING SYSTEM AND CHAIN STOPPER THEREFOR

Freeman Roderick Lea, Orange, Calif., assignor to Santa Fe International Corporation, Orange, Calif.

Filed Aug. 13, 1974, Ser. No. 497,114
Int. Cl.² B63B *21/50*
U.S. Cl. 114—206 R **27 Claims**





6. Apparatus for handling a combination cable and chain anchor line onboard a vessel comprising:

support structure forming a part of the vessel, a chain stopper carried by said support structure, means carried by the vessel defining a path movement for the combination cable and chain anchor line relative to the vessel during anchor shipping and unshipping operations, and means connecting said chain stopper and said support structure one to the other to enable movement of said chain stopper relative to said support structure between a first position engageable about the chain portion of said anchor line along its path of movement and a second position spaced from the anchor chain and the path of movement of the anchor line, said chain stopper including a pair of support members movable toward and away from one another between positions engaging about and spaced from the anchor chain;

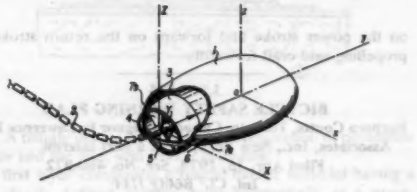
cooperating means carried by said support members for confining at least a portion of a link of said chain when said stopper lies in said first closed position whereby during anchor shipping operations said stopper will positively engage said line at a link of said chain against movement of said link relative to said stopper so that said chain may be disengaged from said cable.

3,967,573

APPARATUS FOR STABILIZING UNDERWATER DEVICES

Joel M. Charles, La Valette, and Maurice Roger Fourtier, Cros-de-Cagnes, both of France, assignors to Etat Francais represente par le Delegue Ministeriel pour l'Armement, France

Filed July 18, 1975, Ser. No. 597,078
Claims priority, application France, Aug. 1, 1974, 74.26704
Int. Cl.² B63B *21/56*
U.S. Cl. 115—6 **9 Claims**



1. Apparatus for stabilizing a self-propelled underwater device connected to a control base by a control cable, comprising:

a support located at the rear portion of said underwater device and including a universal joint to which said cable is coupled;

an auxiliary propeller mounted on said universal joint for movement in two orthogonal directions;

means for measuring forces applied to said underwater device by said universal joint; and

means coupled to said measuring means for adjusting said auxiliary propeller to offset said forces applied by said universal joint.

3,967,574

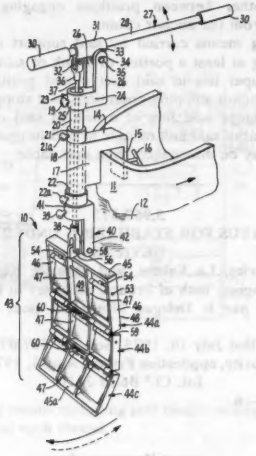
MANUALLY CONTROLLED SCULLING MECHANISM

William Donald Golden, 6258 Ruthland Road, Oakland, Calif. 94611

Filed Nov. 14, 1975, Ser. No. 632,159
Int. Cl.² B63H *1/32*
U.S. Cl. 115—29 **5 Claims**

1. Apparatus for manually propelling and steering a water craft comprising in combination, a steering post rotatable 360° axially in a horizontal plane, a tiller for rotating said steering post and mounted thereon for pivotal movement up and down to provide a pumping stroke, a plurality of blades mounted on the lower end of said steering post at right angles to the vertical plane of said tiller and for movement with said steering post, said blades being hinged together horizontally for flexing in one direction only which direction is the return stroke, means on said blades for preventing flexing in the other direction which is the power stroke, said blades also having a plurality of windows therethrough and hinged cover plates for covering and closing said windows on the power stroke and

opening on the return stroke, linkage means connecting said blades to said tiller to move said blades alternately rearward



on the power stroke and forward on the return stroke for propelling said craft forwardly.

3,967,575

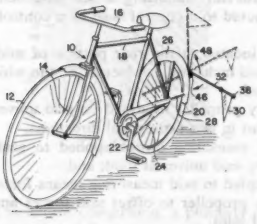
BICYCLE SAFETY WARNING FLAG

Barbara Coutts, Toronto, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 15, 1974, Ser. No. 460,822

Int. Cl.[2] B60Q *1/34*

U.S. Cl. 116—35 A **1 Claim**



1. A signal and flag device for use on wheeled vehicles such as bicycles, tricycles, minibikes and the like having at least one rear traction wheel carried by a vehicle frame portion, said signal and flag device comprising flag means, flag pole post means engaging said flag means for supporting the same, flag pole post support base means engaging said post means for supporting the same, said flag means carried jointly by said support base means and said flag pole post means for swiveling said flag pole means into any of a plurality of possible angularly oriented and stationary positions about said support base means for displaying said flag means in any of said angular and stationary positions, said vehicle frame portion comprising a mudguard fender means extending over a portion of said rear traction wheel for movement with said frame portion, connecting means for connecting said flag pole post support base means to said mudguard fender means for support thereon such that said flag pole post means is angularly orientable about said support base means to display said flag means in a direction oriented to the left, right, upright, rearwardly and in any other selected direction about said support base means on related movement of said flag pole post means, said flag pole post support base means comprising a base plate portion secured to said mudguard fender means, flange means formed integrally with said base plate portion and extending outwardly therefrom, said connecting means being carried jointly by said support base means and said mudguard fender means for supporting said flag pole post means thereon, said flag pole support base means comprising an upwardly open hollow ball joint cup member, said flag pole post means comprising a lower spherical seating end swivel portion seated in said hollow ball joint cup member, whereby said flag pole post means is movable angularly about the center of said lower spherical seating end swivel portion for moving said flag means from a neutral position to any desired angular position related to the safety of the cyclist in traffic, supplementary indicating directional means constructed and arranged for being removably carried on an outer end portion of said flag pole post means for movement therewith and comprising a direction indicating body portion formed of lightweight material and bearing a light responsive and luminescent pigment material for becoming highly visible to onlookers, traffic, other vehicles and pedestrians, under ambient lighting conditions and on impingement of motor vehicle lights thereon for giving a visual direction signal to others, said supplementary indicating means comprising said indicating body portion construction in the form of a solid conical arrow shaped body and formed from a highly visible material for pointing as an arrow to indicate desired directional movement of the cyclist, and a flexible wirelike tie and directing means engaged at one end to said flag pole post means and engaged at its other end in loosely secured relationship to a portion of said vehicle, and said wirelike tie being within reach of the hands of the cyclist so that pulling or pushing of said tie causes the angular orientation of said flag pole means to be varied without necessitating dismounting by the cyclist from the cycle.

3,967,576

TETRAPODE FOR MARKING OFF PURPOSES

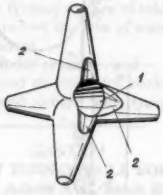
Erik Boerge Soerensen, 68 Langelinie, 7100 Vejle, Denmark

Filed Mar. 13, 1975, Ser. No. 557,950

Claims priority, application Denmark, Apr. 1, 1974, 1786/74

Int. Cl.[2] E01F *9/00*; G08B *5/00*

U.S. Cl. 116—63 P **2 Claims**



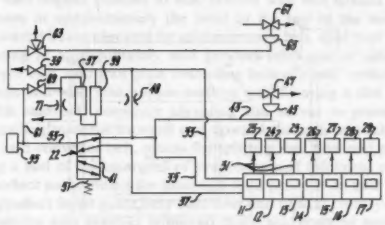
1. A tetrapode for marking-off purposes, comprising four frustoconical legs substantially symmetrically joined to each other at the wider portion of said legs, at least one of said legs being hollowed out sufficiently to receive a portion of a leg of a similarly dimensioned tetrapode, and the other three legs adjoining said one of said legs being provided with generally parabolic depressional interruptions in their frustoconical shapes beginning at points adjoining the hollowed out portion of said of one said legs extending along each of the said other three legs toward the unattached ends thereof, said depressional interruptions being contoured to abut on a major portion of their surfaces, portions of frustoconical legs of a similarly dimensioned tetrapode having a leg inserted into said one of said legs.

3,967,577

PNEUMATIC CONTROL SYSTEM

Robert A. Bilbrey, Orinda, Calif., assignor to California Controls Company, Berkeley, Calif.

Filed May 15, 1975, Ser. No. 577,757
Int. Cl.² G08B 1/04
U.S. Cl. 116—65 12 Claims



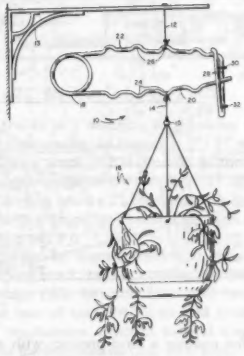
1. A pneumatic control system comprising, a plurality of annunciators, each having a shuttle element therein responsive to a sensed condition to move between a first position at which a sensed normal condition is indicated and a second position at which a sensed abnormal condition is indicated, each of said annunciators having spring means therein biasing said shuttle element toward said second position, each of said annunciators having brake means therein responsive to a bias pressure to retain said shuttle element against movement, and means for applying a bias pressure to all of said brake means upon movement of any one of said shuttle elements from the first position to the second position upon sensing an abnormal condition, whereby those of said annunciators for which a sensed normal condition exists continue to indicate a normal condition.

3,967,578

MOISTURE GAUGE FOR A HANGING POTTED PLANT

Joseph Sebato Gallo, 58 Peach St., Walpole, Mass. 02081

Filed May 12, 1975, Ser. No. 576,885
Int. Cl.² G01G 3/08; G01D 18/00; G01N 5/00
U.S. Cl. 116—114 R 4 Claims



1. A moisture weight gauge for insertion between two adjacent segments, of a pendant support for a hanging potted plant, having, in combination,

a generally U-shaped spring wire support element including a spring coil,

two arms extending from said spring coil in approximately parallel relation,

one of said arms terminating in a pointer,

the other of said arms having a calibrated extension crosswise of said arms providing a guideway for directing relative movement of the guideway and said pointer arm toward and away from one another, and

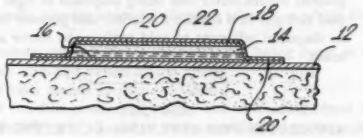
means for maintaining substantially constant limits of movement of said pointer arm relative to said guideway compensating for differences in plant weight which comprises a plurality of means for selective attachment of said segments at spaced points or intervals along the length of each arm, said means of attachment being paired, one of a pair on each arm, and equally distant from said spring coil.

3,967,579

TELLTALE DEVICE

Charles Seiter, Los Angeles, Calif., assignor to Stanton H. Kaye, Venice, Calif., a part interest

Filed Oct. 29, 1975, Ser. No. 627,021
Int. Cl.² G01K 11/08
U.S. Cl. 116—114.5 9 Claims



1. A telltale device for indicating deterioration of perishable goods and the like, said device including:

a first layer comprising a fusible carrier material having a clearly defined melting point substantially at a preselected critical temperature;

a second layer comprising an indicator for visually indicating contact with said carrier material;

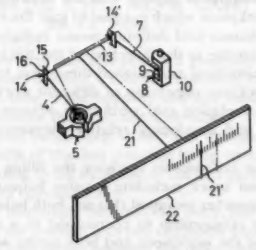
a gel diffusion barrier disposed between said first and second layers for the diffusion of said carrier material therethrough at a preselected rate at and above the critical temperature for contact with said indicator thereby to visually indicate that said device has been maintained above the critical temperature for at least a preselected period of time as determined by the diffusion rate of the said carrier material in said barrier.

3,967,580

POINTER DEVICE FOR MEASURING APPARATUS

Isamu Yaoita, Kawasaki, Japan, assignor to Eiwa Denki Co., Ltd., Tokyo, Japan

Filed Sept. 19, 1974, Ser. No. 507,361
Int. Cl.² G01D 7/00
U.S. Cl. 116—115 2 Claims



1. In a pointer device for use in a measuring apparatus, in combination:

a. a rotary shaft (6) which rotates in response to an external change;

b. parallelogram means coupled to said rotary shaft (6) including an elongated straight first needle with inner and outer ends, said inner end being coupled to said rotary shaft extending radially therefrom so as to move in response to the rotation of said rotary shaft, an auxiliary straight second needle (7) equal in length to said first needle also with inner and outer ends, set parallel to said first needle a preset distance, a straight third needle with ends disposed between the outer ends of said first and second needles;

c. first and second moveable bearings, holding said third needle ends to the outer ends of said first and second needles, said bearings each having a U-shaped bracket with two arms having an extremely thin twistable band stretched between said arms, a third fixed bearing of the same construction as said first and second bearing, said second straight needle inner end being connected thereto; and,

d. scale means and pointer means coupled to said parallelogram means, said scale means being disposed adjacent said pointer means and being incremented in units corresponding to a unit value of the rotation of said shaft said pointer means outer end being disposed at right angles to said straight first needle to define said pointer means and so disposed adjacent to said scale as to move along said scale.

3,967,581

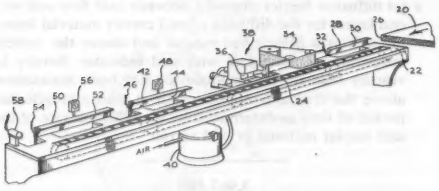
APPARATUS FOR APPLYING A COATING TO A WORKPIECE EDGE

Irvin Edward Zirbel, 11727 W. Dorothy St., Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 159,783, July 6, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,907

Int. Cl.² B05C 5/02

U.S. Cl. 118—2 **22 Claims**



1. Apparatus for applying a thin coating of fast-drying filler material to a workpiece edge comprising:

means for defining a confined space adjacent the workpiece edge in which the workpiece edge is removably and movably included as a wall thereof, said confined space having a dimension aligned with the thickness dimension of the workpiece which is equal to said thickness dimension and wherein said defining means include means adjustably variable in the direction of the thickness dimension for establishing said aligned dimension to correspond to the thickness dimension of different workpieces;

means for placing said workpiece adjacent said confined space and developing relative movement between the two;

means for controllably applying the filling material to the confined space including a valve housing and a rotary valve member mounted therein, both being configured in mating relationship to correspond to a selected curved edge of the workpiece and both acting with the defining means to establish said confined space; and

means for activating the applying means when the workpiece edge is adjacent the confined space.

3,967,582

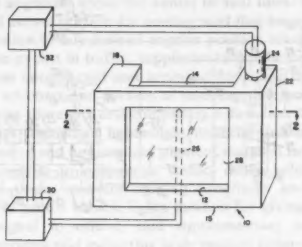
OPTICAL RADIATION PROTECTION MECHANISM

Thomas G. Roberts, and Thomas A. Barr, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 538,296

Int. Cl.² B05C 3/12

U.S. Cl. 118—5 **2 Claims**



1. A mechanism for protection of optical glass plates against high energy laser radiation and absorbing such radiation comprising: a film container including a water impregnated or coated film having one end connected to a supply spool and the opposite end connected to a take-up reel, said container having means for housing said spools and being provided with an opening for said film to extend across; said housing opening and film thereacross being operatively associated with a window; a thermal sensor mounted on said container and disposed close to said window; a resistance bridge and differentiator connected to said thermal sensor; a stepping motor connected to said take-up spool; and a power supply connected to said motor and said bridge to control movement of said take-up spool when actuated by said resistance bridge.

3,967,583

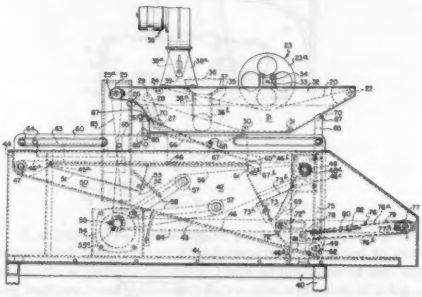
COMPACT IN-LINE BREADING MACHINE

Raymond E. Booth, Sandusky, Ohio, assignor to Sam Stein Associates, Inc., Sandusky, Ohio

Continuation-in-part of Ser. No. 459,567, April 10, 1974, Pat. No. 3,915,116. This application Jan. 27, 1975, Ser. No. 544,323

Int. Cl.² A21C 9/04

U.S. Cl. 118—16 **3 Claims**



1. Means for coating a food product with a finely divided particulate coating material comprising a frame, a conveyor belt movably mounted in said frame and having an inlet end and a discharge end, means for moving said belt, means for providing a flow of said coating material to said inlet end of said conveyor belt forming a product path centrally thereof, said last means comprising a coating material storage hopper in the lower portion of said frame having parallel vertical side walls and having a bottom wall which is a flat plate inclined

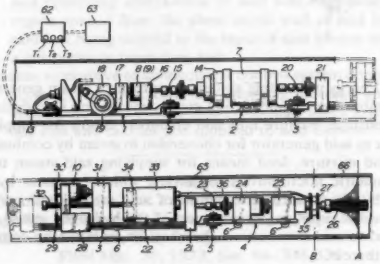
upwardly from a low point spaced below said discharge end to a point immediately below said inlet end and having one end wall at the higher end of said bottom wall; an open mesh conveyor belt having a linear breading material elevating run in said hopper and traveling between said vertical side walls and close to said inclined bottom wall, said elevating run supported by a pulley equivalent at said low point and by a downstream pulley equivalent near said higher end of said bottom wall; said means also comprising a flat roof plate fixed in said hopper parallel to said bottom wall and spaced thereabove at approximately the level of the top of the breading material being elevated by said conveyor belt, said roof terminating at approximately said product-inlet end of said conveyor belt, said roof plate extending between said vertical side walls and with said hopper bottom wall forming a slot which with said belt conveyor elevating run serves to pump said breading material forward and upward through said inlet end of said conveyor belt, means for splitting said flow and providing a bed of said material of predetermined thickness on said product path, means for placing a food product on said bed at a product input point near said inlet end of said conveyor belt whereby said product is moved down said path by said belt, and discharged in a coated condition at the end of said path.

3,967,584

SELF-RUNNING AND AUTOMATIC CLEANING COATING MACHINE FOR INTERNAL WALL OF PIPE

Akira Hasegawa, Tokyo, and Hiromichi Ozoe, Nishinomiya, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 17, 1974, Ser. No. 506,889
Claims priority, application Japan, Sept. 19, 1973, 48-104884; Sept. 19, 1973, 48-108751[U]
Int. Cl.² B05C 7/08
U.S. Cl. 118—72 2 Claims



1. A line of trucks as a machine for working within a small diameter pipe, comprising, in line:

a. a travel-driving truck (1) at the rear of the line, having a drive force transmission mechanism (17, 18);

b. a motor carrying truck (2) connected to said travel-driving truck having a motor (7) including high and low speed clutch means (8, 9);

c. a coating material supply truck (3) connected to said motor carrying truck, having coating material storage and feeding means (33, 34) and front and rear drives (21) coupled at one of said drives to said motor (7) and a reduction mechanism coupled to said coating material storage and feeding means (33, 34); and,

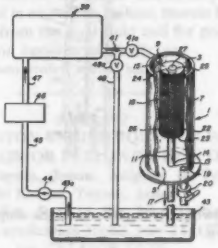
d. a working truck (4) at the front of the line having first and second transmission means (25, 24), and cleaning and coating means (35) having a brush (26) and a rotary blade (27) operatively coupled with said second transmission means, said second transmission means (24) being coupled to said first transmission means 25.

3,967,585

LARVAE COLLECTION SYSTEM

George Monaco, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 2, 1975, Ser. No. 564,237
Int. Cl.² A01K 61/00
U.S. Cl. 119—2 16 Claims



1. A small, aquatic animal-collecting apparatus which comprises

a container suitable for retaining water being open at the upper end and closed at the other;

a fluid inlet means to said container;

a fluid conduit positioned within and extending about the vertical length of said container and passing through a lower portion of said container;

a fluid outlet means positioned in the upper portion of said conduit; and

a screening means positioned between the side walls of the container and said fluid outlet means so that said small aquatic animals are retained in said container in a life sustaining amount of water, while excess water is allowed to pass through said screening device and out said outlet means, said screening means comprising

a first plate;

a second plate parallel to, spaced from, and about the same size as said first plate;

said conduit passing through an apperture centrally located in said first plate, the end of said conduit being attached to a face of said second plate, the corresponding edges of said plates being the same distance from the outer wall of said conduit; and

a fluid permeable material extending between the edges of said plates and enclosing a portion of said conduit and said fluid outlet means positioned on the upper portion of said conduit by being snugly fitted at least around the periphery of said first plate.

3,967,586

DIAPHRAGM TEAT CUP ASSEMBLY FOR MILKING

Daniel O. Noorlander, 1864 S. 568 East, Orem, Utah 84057

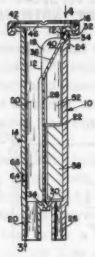
Filed Feb. 5, 1973, Ser. No. 329,667
Int. Cl.² A01J 5/04
U.S. Cl. 119—14.53 3 Claims

1. Diaphragm teat cup comprising a generally cylindrical two-part elongated housing, a first part including a head at one end and a milk tube at the opposite end and being open at a side thereof between the head and milk tube,

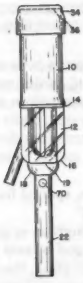
the second part being open at one side complementary to the open side of the first part and being open at the end corresponding to the head end of the first part and having a tube at its opposite end,

an elongated diaphragm between said parts, said diaphragm separating the housing into two chambers one of which is in the first part of the housing, the other chamber being formed by the second part and the diaphragm,

elongated slidable channel-shaped connectors along the length of the parts at corresponding edges thereof securing the two parts together and the diaphragm between the two parts.



3,967,587
TEAT CUP INFLATION
Daniel O. Noorlander, 1864 S. 568 East, Orem, Utah 84057
Filed Dec. 13, 1972, Ser. No. 314,775
Int. Cl.[2] A01J *5/04*
U.S. Cl. 119—14.49 **4 Claims**

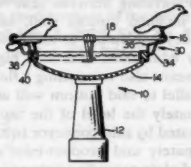


1. A teat cup assembly comprising a shell and an inflation, the shell including two interconnected sections, one of which is of stainless steel and the other being transparent, the stainless steel section being at the proximate end of the shell and the transparent section being at the distal end thereof,

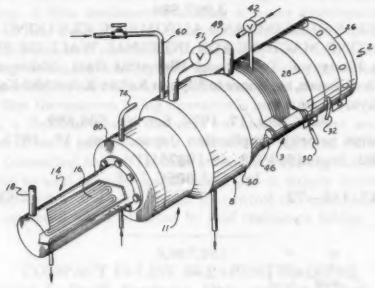
the inflation comprising a one-piece elastomeric member including a liner and a milk tube extending therefrom and through the shell, means on the inflation engaging the shell at the proximate end of the stainless steel section, and there being an abutment on said inflation between the liner section and the milk tube against which the distal end of the transparent section of the shell abuts.

3,967,588
ACCESSORY FOR A BIRD BATH
William E. Brown, 214 Park Ave., Pewaukee, Wis. 53072
Filed Jan. 26, 1970, Ser. No. 5,767
The portion of the term of this patent subsequent to July 6, 1991, has been disclaimed.
Int. Cl.[2] A01K *45/00*
U.S. Cl. 119—26 **8 Claims**

1. In combination; a vessel, a perch, said perch being of substantially the same geometric configuration in horizontal plan as the peripheral edge of the vessel and defining an area greater than the area defined by said edge and legs for connecting said perch to said vessel in spaced circumscribing relationship to said vessel edge in a horizontal plane parallel to and spaced above the horizontal plane of said vessel edge.



3,967,589
ENERGY GENERATING SYSTEM
Ronald I. Papineau, Chesterfield Road, Goshen, Mass. 01032
Filed Jan. 27, 1975, Ser. No. 544,400
Int. Cl.[2] F22B *1/00*
U.S. Cl. 122—4 R **6 Claims**



1. Energy generating system comprising a steam generator, a combustion chamber, fuel supply means for introducing a combustible mixture into said chamber, means for supplying water to said generator for conversion to steam by combustion of said mixture, feed means for supplying said steam to an asymmetric microporous membrane which produces hydrogen by chemical disassociation of said steam, and conduit means for supplying at least part of the hydrogen gas so produced to said combustion chamber for maintaining combustion therein.

3,967,590
HEAT EXCHANGE CONTROL SYSTEM
Herbert G. Hays, Amana, and Richard D. Maxwell, Cedar Rapids, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa
Continuation of Ser. No. 436,231, Jan. 24, 1974, abandoned. This application Aug. 29, 1975, Ser. No. 608,951
Int. Cl.[2] F22B *21/06*
U.S. Cl. 122—4 R **7 Claims**

4. A heat exchange system comprising:

a heat exchanger comprising a solid structure surrounding a central plenum;

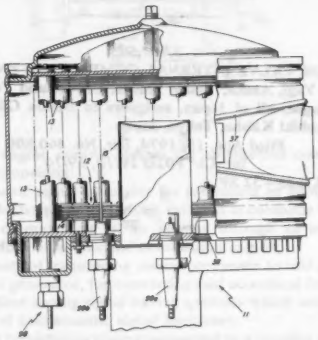
means for supplying the products of combustion to said central plenum comprising a burner having an apertured surface and means for supplying a fuel-air mixture through the apertures in said surface at a rate providing a flame front substantially spaced from said surface and extending across regions between jets of said fuel-air mixture issuing from said ports;

conduit means for directing a fluid to be heated through said heat exchanger; and

electrical heater means adjacent to and in heat exchange relationship with said conduit means and means for energizing said heater when said burner is not in operation for maintaining said fluid in said heat exchanger and the walls surrounding said central plenum above a predetermined temperature during periods when said products of combustion are not being supplied to said heat exchanger.

6. A package heat exchange system comprising:

a fluid heater having a central plenum comprising a plurality of tubular members surrounding said central plenum and rigidly interconnected by a plurality of fins;



a sheet metal burner having a plurality of ports positioned in said plenum and supplied with a gaseous fuel-air mixture through a blower to produce a flame front extending across regions between jets of fuel issuing from said ports and producing combustion of said fuel-air mixture in a region spaced from the sheet metal wall of said burner, said fuel being supplid to the input of said blower through a gas pressure regulator; and

means responsive to an electrical control system controlling actuation of said blower for changing the total aperture area in the input of said blower through which said gaseous fuel and said air are supplied to said blower.

3,967,591

STEAM GENERATOR FOR FAST BREEDER REACTOR

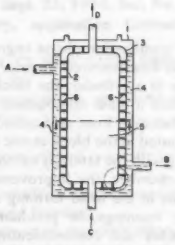
Shoji Iida, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1973, Ser. No. 346,330

Claims priority, application Japan, Mar. 31, 1972, 47-32211

Int. Cl.² F22B *1/16*

U.S. Cl. 122—32 **7 Claims**



1. A steam generator for a fast breeder reactor which comprises:

an enclosure-type outer shell;

a substantially endless partition wall disposed within said shell in spaced relation with the inner wall of said shell so as to define an endless outer chamber between said shell and said partition wall and surrounding said partition wall for a hot fluid, and defining a substantially enclosed inner chamber centrally therewithin for a cold fluid, and having a plurality of closed, separated cells serially and continuously disposed in an endless fashion therein for separating the hot fluid from the cold fluid and for preventing fluid communication between said cells; and

a thermal medium sealed within said cells.

3,967,592

ROTARY PISTON ENGINE EQUIPPED WITH AN IMPROVED AIR OR FUEL INJECTION OPENING

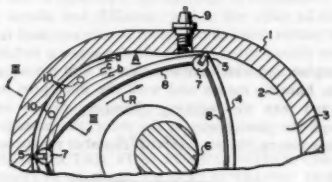
Yoshio Sasaki, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 5, 1974, Ser. No. 521,060

Claims priority, application Japan, July 22, 1974, 49-83908

Int. Cl.² F02B *53/10*

U.S. Cl. 123—8.09 **5 Claims**



1. In a rotary piston engine comprising a casing composed of a center housing having a trochoidal inner peripheral surface and side housings closing opposite ends of said center housing, and a polygonal rotor rotatably disposed for eccentric rotation in said casing, said rotor being provided with apex seals disposed at the apex edge portions thereof and contacting said inner peripheral surface of said center housing with corner seals provided at the apex side portions thereof and with side seals provided to extend between two adjacent apex portions of the rotor and contacting the inner walls of said side housings so that the volume variation of the operating chambers defined by said casing and said rotor effect suction, compression, combustion, expansion and exhaustion strokes of the operating fluid, wherein the improvement comprises providing at least one injection opening which opens in said inner wall at a portion which defines said operating chambers while they are performing suction and compression strokes, said opening being disposed outside the outer envelope of traces of said side seal and inside the outer envelope of traces of said corner seal, said opening having a cross-sectional shape which is covered by the cross-sectional shape of said corner seal.

3,967,593

ROTARY PISTON INTERNAL COMBUSTION ENGINES

David Walker Garside, Solihull, England, assignor to Birmingham Small Arms Company Limited, Birmingham, England

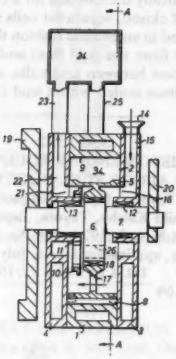
Filed Oct. 29, 1974, Ser. No. 518,876

Int. Cl.² F02B *55/06*

U.S. Cl. 123—8.45 **15 Claims**

1. A rotary piston internal combustion engine comprising housing means, at least one cavity formed within the housing means, a rotor rotatably mounted within the cavity, the peripheral wall of the cavity and the rotor being so shaped that working chambers are formed therebetween which vary in volume as the rotor rotates, an inlet port and an exhaust port in the housing means whereby gases may be respectively admitted to and exhausted from the working chambers, an air

passageway in the housing means, at least one air passageway through the rotor which communicates with the air passageway in the housing means, and means secured to the housing means providing air reservoir chamber means with an internal volume which is greater than the volumetric displacement of



the engine and which communicates with the air passageway in the housing means and with the inlet port whereby air inducted into the working chambers passes in sequence through the passageway in the rotor, the passageway in the housing means, the air reservoir chamber means and the inlet port.

3,967,594

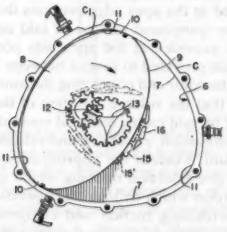
ROTARY POWER UNIT

Donald K. Campbell, Underwood, Wash. 98651

Filed Jan. 27, 1975, Ser. No. 544,397

Int. Cl.² F02B *55/14*

U.S. Cl. 123—8.45 **8 Claims**



1. A rotary engine including, a housing having a casing provided with a tri-lobular interior wall, a substantially elliptical piston disposed within said casing and having two curved faces terminating to provide a nose at the two distal portions of the major axis of said piston, planar side faces on said piston, said major axis of a greater length than a chord subtending any two adjacent lobes of said tri-lobular casing interior wall, said housing including two side plates having planar inner faces enclosing said piston and casing interior wall, said piston provided with a central bore bounded by a circular bearing surface, a female piston position gear formed on each side of said piston bearing surface, a center drive cam journaled within said piston bore, each said side plate including a central opening having a surrounding circular female bearing surface adjacent said piston sidewall and a cam drive outer gear outside said female bearing surface, support means including a cylindrical head journaled in each said female bearing surface and each having a planar inner face coplanar with said respective side plate face, said drive cam including integral eccentric end drive means extending laterally from both sides thereof and projecting respectively through each said support means, an eccentrically disposed male piston position gear on each said support means each journaled about one said end drive means and engaging one said female piston position gear, a cam drive inner gear carried by the projecting portion of each said end drive means on the side of said support means away from said piston and engaging said cam drive outer gear, three firing chambers defined between said casing interior wall and one of said piston faces adjacent said casing lobes, said male and female piston position gears defining a ratio of 1:2 whereby, as said piston rotates 60° from one firing chamber to another the center axis thereof is displaced 120° relative said side plate openings.

3,967,595

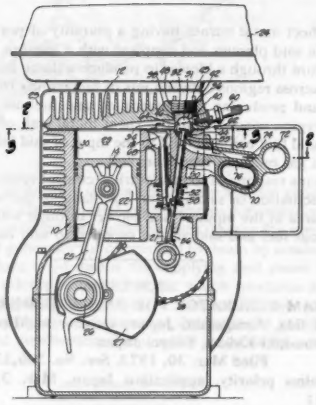
SIDE VALVE INTERNAL COMBUSTION ENGINE

Shizuo Yagi, Asaka; Toshio Shioya, Urawa, and Yukio Tada, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1974, Ser. No. 460,800

Int. Cl.² F02D *19/10, 19/16*

U.S. Cl. 123—32 SP **12 Claims**



1. In an internal combustion piston engine having a engine block and an engine head secured thereto, the block having a piston reciprocable in a cylinder, the block, head and piston cooperating to define a main combustion chamber having a portion extending laterally from said cylinder, and intake and exhaust valves mounted in the block at one side of the cylinder and communicating with the laterally extending portion of the main combustion chamber, the improvement comprising, in combination: means in the head forming a prechamber provided with three openings, a prechamber intake valve mounted in the block and communicating with one of the openings, a spark plug mounted in the head and communicating with another of the openings, and the third opening comprising a torch nozzle establishing communication between the prechamber and the main combustion chamber.

3,967,596

ENGINE CONTROL SYSTEMS

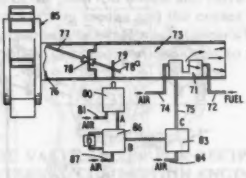
Peter Nigel Comley, Torquay, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Apr. 9, 1974, Ser. No. 459,398

Claims priority, application United Kingdom, Nov. 28, 1973, 55116/73; Apr. 12, 1973, 17610/73

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA 3 Claims



3. An engine control system for an internal combustion engine, comprising:

an acoustic signal generator for producing an acoustic signal the frequency of which varies in accordance with the rate of mass flow of air passing through an induction manifold of an internal combustion engine;

an acoustical transducing means proximate to said acoustic signal generator, for converting said acoustical frequency to a first analog signal having qualities which are a function of said acoustic signal frequency;

a speed transducing means connected to a rotating member of the internal combustion engine, for converting the rate of rotation of said engine to a second analog signal having qualities which are a function of said rate of rotation;

a modulating means having a first input connected to said acoustical transducing means and a second input connected to said speed transducing means, for generating a modulated control signal having qualities which are proportional to the ratio of said acoustic signal frequency to said rate of engine rotation;

a fuel metering means mounted to introduce fuel into the induction manifold in response to said control signal on a control input connected to the output of said modulating means;

whereby the fuel introduced into the induction manifold per revolution of the engine, is proportional to the ratio of said acoustic signal frequency to said rate of engine rotation.

3,967,597

ELECTROMAGNETICALLY ACTUATED FUEL INJECTION VALVE

Walter Schlagmüller, Schwieberdingen, and Herbert Wagner, Bamberg, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 23, 1974, Ser. No. 508,719

Claims priority, application Germany, Oct. 3, 1973, 2349584

Int. Cl. F16k *31/06;* B05b *1/30*

U.S. Cl. 123—32 JV 3 Claims

1. An electromagnetically actuatable fuel injection valve, comprising:

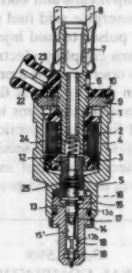
a. a housing;

b. a magnetic core, affixed coaxially to and within the housing;

c. a magnetic winding, fixedly surrounding said magnetic core within said housing;

d. a magnetic armature, movably disposed within said housing, coaxial with said magnetic core and separated therefrom by an air gap, said magnetic armature being provided with a central, longitudinal bore; and

e. a valve needle, disposed and guided within a bore of said housing, coaxial with said armature and said core, said valve needle being provided at one of its ends with a series of generally parallel lands and interposed grooves, said end being received within the bore of the armature so that said series of lands and grooves cooperate with the inner wall of the bore to form a press-fit connection of the valve needle and armature, and at the other of its ends with at least one groove formed in its outer surface which establishes a passage between that valve needle and the housing bore for the flow of fuel through the housing bore.



3,967,598

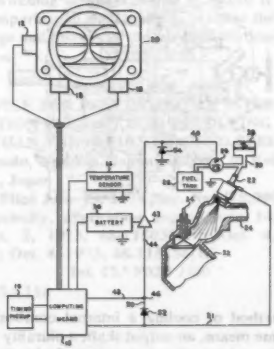
COMBINED ELECTRIC FUEL PUMP CONTROL CIRCUIT INTERMITTENT INJECTION ELECTRONIC FUEL CONTROL SYSTEMS

Todd L. Rachel, Yorktown, Va., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 158,350, June 30, 1971. This application Dec. 14, 1973, Ser. No. 425,000

Int. Cl.² F02G *3/00;* F02M *39/00*

U.S. Cl. 123—32 EA 2 Claims



1. A non-return fuel supply system for a fuel injection system having an electronic control unit generating intermittent control pulses and one or more fuel injector valves adapted to be actuated in timed duration by said control pulses, the improvement comprising:

a fuel supply tank;

fuel pump means connected to said supply tank for pressuring fuel received therefrom in response to energization of the fuel pump means;

fuel delivery conduit means for receiving the entire pressurized fuel output of the fuel pump means and adapted to supply said entire fuel output to the injectors;

fuel accumulator means connected to said fuel delivery conduit means for regulating pressure and storing fuel therein;

first control means coupling said electronic control unit and both said fuel pump means and said injector means operative to normally energize said fuel pump means and provide said control pulses to said injector valves.

second control means coupling electronic control unit and said pump means operative for a predetermined duration commenced when said system is first energized to energize said fuel accumulator means to a fluid pressure and volume sufficient for initial injection; and

means connecting said first and second control means for preventing said second control means from energizing said injector valves during said predetermined duration.

3,967,599

ROTARY INTERNAL COMBUSTION ENGINE AND METHOD OF COOLING THE SAME

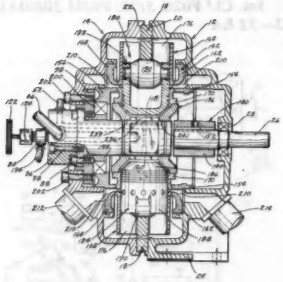
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation of Ser. No. 351,606, April 16, 1973, Pat. No. 3,828,740, and a continuation-in-part of Ser. No. 286,189, Sept. 5, 1972, abandoned. This application July 15, 1974, Ser. No. 488,781

The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.

Int. Cl.² F02B *57/00*

U.S. Cl. 123—44 D **2 Claims**



1. The method of cooling a internal combustion enging having a frame means, an output shaft, a plurality of cylinders each having a reciprocating piston operatively secured to said output shaft, comprising,

introducing combustible fuel into said cylinders and combusting said fuel to force said pistons to move through an expansion stroke in said cylinders,

and introducing ambient air directly into said cylinders for a period of time greater than the time period consumed by the power portion of the expansion stroke of said pistons after combustion of said fuel to purge the exhaust gases resulting from combustion, to recharge said cylinders with fuel, and to cool the pistons and the ineriors of said cylinders.

3,967,600

CARBURETOR CHOKE CONTROL DEVICE

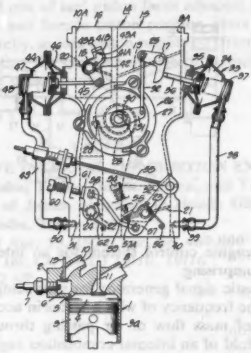
Masahiko Iiyama, and Takashi Kamezaki, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1974, Ser. No. 520,006

Claims priority, application Japan, Nov. 7, 1973, 48-125212

Int. Cl.² F02M *25/06*

U.S. Cl. 123—75 B **13 Claims**



1. In a carburetor choke control device for an internal combustion engine into which a rich air-fuel mixture and a lean air-fuel mixture are inducted, the improvement comprising, in combination: a main carburetor for producing a lean mixture, an auxiliary carburetor for producing a rich mixture, a main choke valve in the main carburetor, an auxiliary choke valve in the auxiliary carburetor, a main choke valve closing device connected to said main choke valve to move it toward closed position, an auxiliary choke valve closing device connected to said auxiliary choke valve to move it toward closed position, a main choke valve opening device responsive to engine operation and connected to open said main choke valve to a pulldown angle predetermined by the main choke valve closing device, and an auxiliary choke valve opening device responsive to engine operation and connected to open said auxiliary choke valve fully against the action of said auxiliary choke valve closing device.

3,967,601

VALVE CONTROL

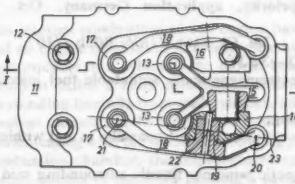
Hansjorg Heberle, Ludwigshafen, Germany, assignor to Motoren- und Turbinen-union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Aug. 7, 1975, Ser. No. 602,786

Claims priority, application Germany, Sept. 7, 1974, 2442969

Int. Cl.² F01L *1/18*

U.S. Cl. 123—90.4 **4 Claims**



1. A valve control for internal combustion engines with several valve means per cylinder arranged in the cylinder head which are actuated from a cam shaft by way of push rod means

and rocker arm means supported in bearing bracket means, each valve means disposed nearer the actuating side being actuated by way of first rocker arm means, characterized in that each valve means disposed more remote from the actuating side is actuated by a further rocker arm means, each further rocker arm means extending arcuately shaped about a corresponding bearing bracket means and a first valve means, each of said further rocker arm means including a bearing pin means for pivotally supporting a further rocker arm means in a corresponding bearing bracket means, and the centers of the bearing points of the push rod means and valve stem means of said further rocker arm means and the center of the bearing place in the rocker arm bearing bracket means being arranged in a common plane disposed perpendicular to the axis of the bearing pin.

3,967,602

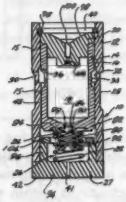
HYDRAULIC VALVE LIFTER FOR RECIPROCATING INTERNAL COMBUSTION ENGINES

William G. Brown, 601 E. Angeleno Ave., Apt. O, Burbank, Calif. 91501

Continuation-in-part of Ser. No. 477,615, June 10, 1974. This application Sept. 23, 1974, Ser. No. 508,145

Int. Cl.² F01L *1/14*

U.S. Cl. 123—90.55 **4 Claims**



1. An improved hydraulic valve lifter of the type having a lifter body with an axial bore, a base of the lifter body, a cam following face on the base for engagement by the lobe of a cam, a plunger axially displaceable within the axial bore of the lifter body between a first position close to the base of the lifter body and a second position remote from the base, the plunger being for acting on a push rod, a fluid receiving cavity in the axial bore of the lifter body and in series force relationship between the lifter body base and the plunger, and means for providing fluid to the fluid receiving cavity to lift the plunger in the axial bore of the lifter body, the improvement which comprises;

a leak path means between the fluid receiving cavity and the outside of the valve lifter through the base of the lifter body and the cam following face, the leak path means being sufficient to prevent the cavity from filling with fluid from the fluid providing means during low to moderate engine speeds and thereby preventing the plunger from reaching its second position, but being restricted enough to allow the cavity to fill with fluid from the fluid providing means at a predetermined, greater engine speed and to thereby force the plunger into its second position.

3,967,603

SPEED SENSITIVE SWITCHING DEVICE

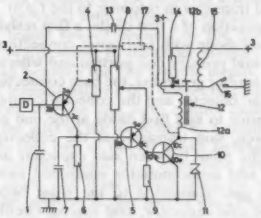
Roger Jean Hubert, 73 Avenue de la Republique, 93800 Epinay-sur-Seine, France

Filed May 16, 1974, Ser. No. 470,439

Claims priority, application France, May 22, 1973, 73.18511

Int. Cl.² F02P *9/00, 1/00*

U.S. Cl. 123—118 **7 Claims**



1. A speed sensitive switching device for controlling the speed of rotation of an engine, comprising: a tachometric generator for supplying a voltage which is a function of the speed of the engine, a comparator connected to said generator and a battery for comparing the voltage supplied by the tachometric generator with a reference voltage which is a fraction of the voltage of the battery, a switching component, a first and a second dividing bridge, the comparator having a first and second stage of comparison, said first stage comparing the voltage supplied by the tachometric generator with a reference voltage fixed by said first dividing bridge and determining a comparison threshold, in such a way that, when the voltage supplied by the tachometric generator exceeds this threshold, the first stage triggers said second stage of comparison for comparing the voltage from the first stage with another reference voltage fixed by said second dividing bridge, to thereby cause triggering of said switching component, and a dipole, connected in parallel between said switching component and said first stage and conditioned thereby upon triggering of said switching component to take a part of the voltage from the switching component and to return it to said first stage of comparison in such a way as to cause the response of this first stage and thereby of the whole of the device to vary.

3,967,604

DEVICE FOR PREVENTING AN INTERNAL COMBUSTION ENGINE FROM REVOLVING AT MORE THAN THE PREDETERMINED SPEED

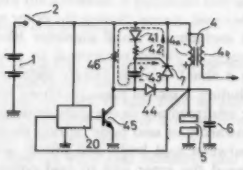
Tetsuya Kondo, Numazu, Japan, assignor to Kokusan Denki Co., Ltd., Japan

Filed June 13, 1974, Ser. No. 478,900

Claims priority, application Japan, June 14, 1973, 48-67243; Oct. 2, 1973, 48-115038[U]; Oct. 4, 1973, 48-115155[U]; Oct. 4, 1973, 48-115156[U]

Int. Cl.² F02P *1/00*

U.S. Cl. 123—118 **2 Claims**



1. A device for preventing an internal combustion engine from revolving at more than the predetermined speed in com-

bination with an ignition system for the engine comprising a power source, an ignition coil including a primary coil portion and a secondary coil portion with said primary coil portion supplied with a primary current from said power source and switching means to interrupt the primary current through said primary coil portion of said ignition coil, said device including a semi-conductor controlled switching element connected in parallel to said primary coil portion of said ignition coil; and a control circuit comprising a transistor to control triggering of said semiconductor switching element, an r.p.m. detector to control said transistor in response to the r.p.m. of said engine, a series connection of a first diode, a first resistor, a capacitor and a second diode with said series connection connected in parallel to said primary coil portion and wherein said transistor has the emitter grounded, the base connected to the output of said r.p.m. detector and the collector connected through a second resistor to said first diode at the end adjacent to said power source, said transistor at the collector further connected to the point between said capacitor and said second diode and said semiconductor controlled switching element having the gate connected to the point between said first resistor and said capacitor, said control circuit connected to control said semiconductor controlled switching element so that it is non-conductive upon said engine revolving at less than the predetermined r.p.m. and so that said semiconductor controlled switching element is conductive upon said engine revolving at more than the predetermined r.p.m. whereby when said semiconductor controlled switching element is non-conductive it allows said ignition coil to induce a high voltage across said secondary coil portion for normal operation of the ignition system and when said semiconductor controlled switching element is conductive said semiconductor controlled switching element shorts a primary voltage across said ignition coil established upon opening of said switching means for non-operation of the ignition system.

3,967,605

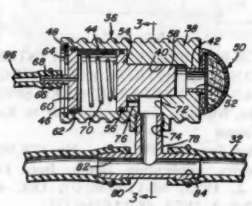
INTAKE VACUUM CONTROLLED MANIFOLD VACUUM SPOILER

James J. Dolfi, Sr., P.O. Box 434, Torrance, Calif. 90508

Continuation-in-part of Ser. No. 284,271, Aug. 28, 1972, Pat. No. 3,820,518. This application May 21, 1974, Ser. No. 471,962

Int. Cl.² F02M *33/00*

U.S. Cl. 123—119 B **7 Claims**



1. In combination, an elongated valve body having a longitudinal bore formed therethrough defining an ambient air inlet at one end and including a diametrically enlarged counterbore at the other end, means closing the outer end of said counterbore and including a small diameter bleed passage formed therethrough, a piston reciprocal in said counterbore and including a shank portion snugly slidable in said bore, said body including a lateral passage whose inner end opens into said bore intermediate its opposite ends and whose outer end opens outwardly of said body, spring means operatively connected between said body and piston yieldingly biasing the latter toward the inner end of said counterbore, said shank being shiftable between a first position with the free end thereof remote from said piston extending completely across and closing the inner end of said lateral passage and a second position with the free end thereof uncovering and thus opening said inner end in response to movement of said piston inward and outward in said counterbore, the outer end of said lateral passage including means for sealed communication with the interior of a PCV valve line of an associated combustion engine, and means adapted to sealingly communicate the outer end of said bleed passage with a source of intake vacuum.

3,967,606

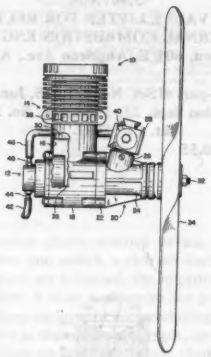
FUEL PUMP FOR INTERNAL COMBUSTION ENGINES

John C. Perry, 971 Mira Mar Drive, Vista, Calif. 92083

Filed June 19, 1974, Ser. No. 480,952

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 AJ **20 Claims**



4. In combination:

an internal combustion engine having a cylinder opening at one end to a crankcase chamber and a piston movable in said cylinder with a reciprocating motion which produces cyclic pressure fluctuations within said chamber;

a fuel pump including a housing mounted directly on said engine, a fuel inlet and fuel outlet on said housing, a fuel passage in said housing communicating said fuel inlet and outlet, pumping means in said housing including a pumping pulsator in said passage exposed directly to said crankcase chamber and movable in a pulsating pumping motion by said chamber pressure fluctuations for pumping fuel through said passage from said inlet to said outlet; and

a fuel pressure regulating valve means within said housing and in said passage for maintaining a relatively constant fuel pressure at said pump outlet.

3,967,607

FUEL INJECTION SYSTEM

Konrad Eckert, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 23, 1974, Ser. No. 508,563

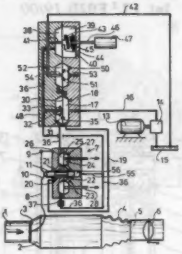
Claims priority, application Germany, Oct. 3, 1973, 2349688

Int. Cl.² F02D *1/00*

U.S. Cl. 123—139 AW **11 Claims**

1. In a fuel injection system for mixture compressing, externally ignited internal combustion engines which include an engine induction manifold and means for continuous injection of fuel into the engine induction manifold, the system comprising: an air-flow measuring element and an arbitrarily actuatable butterfly valve mounted in series within the induction manifold, with the air-flow measuring element being mounted for displacement in proportion to the air-flow in the induction

manifold; a metering valve assembly including a movable part and metering valve apertures operatively associated with each engine cylinder and with the movable part, the movable part being connected to the air-flow measuring element and is thereby movable in response to the displacements of the air-flow measuring element; and means exerting a resetting force against the movable part in opposition to the displacement of the air-flow measuring element wherein the metering valve assembly, due to the movement of its movable part relative to the metering valve apertures, meters out fuel through the metering valve apertures in proportion to the air quantity



flowing through the induction manifold while a constant pressure difference prevails at the metering valve apertures, the improvement comprising:

a differential pressure control valve, connected to said metering valve assembly; and

a plurality of equal pressure valves connected with said metering valve assembly downstream of the metering apertures and with said differential pressure control valve; whereby the differential pressure control valve and the equal pressure valves cooperate with the metering valve assembly so as to maintain a constant pressure difference across the metering valve apertures.

3,967,608

FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

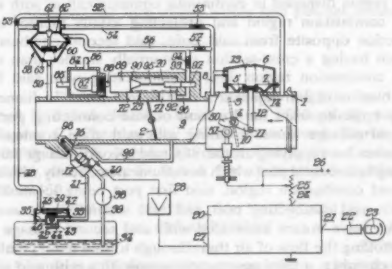
Francois Mennesson, Nanterre, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Mar. 24, 1975, Ser. No. 561,183

Claims priority, application France, Mar. 25, 1974, 74.10141

Int. Cl.² F02M *51/02*

U.S. Cl. 123—139 AW **6 Claims**



1. A fuel feed device for an internal combustion engine having an air intake passage comprising: auxiliary throttle means which opens automatically and progressively in proportion to the increase in the flow rate of air in the air intake passage, said auxiliary throttle means being disposed in said air intake passage upstream of driver actuatable main throttle means; a source of fuel under pressure having a delivery pipe which terminates in a portion of the air intake located downstream of the main throttle means and is controlled by at least one solenoid actuated valve; and a metering system sensitive to the position of the auxiliary throttle means, provided with means which, in operation, delivers a succession of pulses at time intervals and adapted to supply the solenoid valve with an energisation signal during a fraction of each time interval, the fraction being adjusted by the metering system, the delivery pipe being provided with a pressure regulator comprising a relief valve biased toward opening by the pump delivery pressure and toward closure by the under-pressure in that part of the air intake between the two throttle means, said under-pressure being transmitted by a first connecting pipe to a valve control chamber, wherein said valve control chamber is also connected to the inlet of the air intake by a second pipe and is connected to that part of the air intake between the main and auxiliary throttle means by a third pipe provided with means which opens and close it depending on whether the amount of under-pressure in that part of the air intake downstream of the main throttle means is lower or higher than a threshold and a connecting pipe is provided between the third pipe and that part of a cold start additional air duct which is disposed upstream of a cross-section thereof of adjustable area, means sensitive to the engine temperature being provided for closing the connecting pipe when the engine temperature exceeds a limit value.

3,967,609

COMPOUND BOW

Arthur J. Frydenlund, 533 N. Marquette Road, Prairie du Chien, Wis. 53821

Filed Apr. 10, 1975, Ser. No. 566,724

Int. Cl.² F41B *5/00*

U.S. Cl. 124—24 R **7 Claims**

1. An archer's bow comprising:

a. a handle,

b. a pair of limbs extending outwardly from the handle ends with said limbs having tip portions,

c. a sheave mounted on each of said limb tip portions,

d. a lever assembly including a lever arm mounted to said handle adjacent each said limb,

e. a fixed pivot shaft on each said assembly and mounting an associated arm for pivoting therearound,

f. bowstring means trained about said sheaves and said lever assemblies with drawing of said bowstring means causing

said lever arms to pivot about their respective said pivot shafts when a draw force is applied,

g. and means connecting each said limb tip portion with the adjacent lever arm,

h. each said pivot shaft being engaged by said last-named means at maximum draw of said bowstring means to form a stop for the lever arm which mechanically limits the maximum draw distance.

3,967,610

COLD STARTING DEVICES

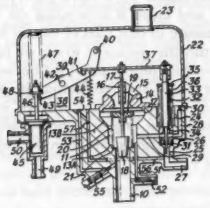
Gray Ernest Donald Ross, Stanmore, England, assignor to The Zenith Carburetor Company Limited, Stanmore, England

Filed Sept. 12, 1974, Ser. No. 505,227

Claims priority, application United Kingdom, Sept. 12, 1973, 42888/73

Int. Cl.² F02N *17/00*

U.S. Cl. 123—179 G **24 Claims**



1. A cold starting device for an internal combustion engine, the cold starting device comprising an auxiliary air supply passage; a first valve member within said auxiliary air supply passage; first biasing means which bias said valve member into an open position at least when the cold starting device is in use, the valve member being arranged so as to tend to be moved when the device is installed on an internal combustion engine by engine suction into a closed position in which it minimizes the flow of air past it to the engine; guide means which guide said valve member for rectilinear movement within said auxiliary air supply passage between said open and closed positions; a fuel metering orifice; conduit means which place said fuel metering orifice in communication with the auxiliary air supply passage upstream of said closed position of said valve member so that metered quantities of fuel can be drawn therethrough into said auxiliary air supply passage by engine suction when said valve member is in the open position; and a thermostatically controlled movable stop for limiting the movement of the valve member towards said closed position, the position of said stop being related to engine temperature so that movement of said valve member is minimized by said stop when the engine is cold and is allowed to increase as the engine warms up towards normal operating temperature whereby movement of said valve member to said closed position is permitted, wherein the improvement comprises a second valve member; a cooperating valve seat positioned within said auxiliary air supply passage upstream of that part of the auxiliary air supply passage with which the fuel metering orifice communicates; second biasing means which urge the second valve member into engagement with said valve seat; the arrangement being such that the second valve member can be seated on said valve seat during the engine cranking period and moved by the depression which is established within said part of the auxiliary air supply passage against the action of the biasing load and away from said valve seat when the engine commences to run under its own power so that the constitution of fuel/air mixture supplied to the engine during starting from cold and warming up of the engine is changed firstly at the termination of the cranking period as well as being further changed progressively once the engine is running under its own power and until it has attained its normal operating temperature.

3,967,611

STRATIFIED-COMBUSTION TYPE INTERNAL COMBUSTION ENGINE WITH PRE-COMBUSTION-CHAMBER

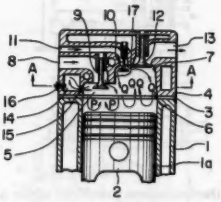
Kenji Goto, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 2, 1974, Ser. No. 429,891

Claims priority, application Japan, Aug. 9, 1973, 48-93113

Int. Cl.² F02B *19/00*

U.S. Cl. 123—191 S **3 Claims**



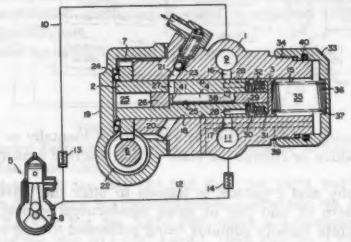
1. In a combustion chamber structure for a stratified combustion-type internal combustion engine having a cylindrical bore with a piston slidably disposed therein, comprising a main combustion chamber defined by wall means and precombustion chamber which is separate from said main combustion chamber and communicates therewith by means of a small connecting port, the precombustion chamber being free of any intake valves, the main combustion chamber including a first substantially cylindrical combustion region which is defined by an axial end wall and a cylindrical sidewall which is substantially aligned with and effects an extension of said bore, said connecting port being formed in said cylindrical sidewall, a first passage communicating directly with said combustion region at a location closely adjacent said connecting port, said first passage terminating in a first port formed in said end wall and positioned closely adjacent said connecting port, first intake valve means associated with said first passage for controlling flow of a rich fuel-air mixture as supplied through said first passage to said main combustion chamber, said main combustion chamber including a second combustion region disposed in continuous communication with said first combustion region and projecting axially thereof in a direction opposite from said bore, said second combustion region having a cross-section substantially smaller than said first combustion region and communicating with said first combustion region adjacent a side thereof which is diametrically opposite from the location of said connecting port, a second passage communicating with said main combustion chamber for supplying air thereto, said second passage terminating in a second port which communicates directly with said second combustion region, said first port being located between said connecting port and said second port, second intake valve means associated with said second passage for controlling the flow of air therethrough to said main combustion chamber, a third passage communicating with said main combustion chamber and having exhaust valve means associated therewith for controlling the flow of exhaust gases from said main combustion chamber through said third passage, and an ignition device associated directly with said precombustion chamber for igniting the rich fuel-air mixture therein.

3,967,612

LUBRICATING OIL PUMP FOR USE IN AN INTERNAL COMBUSTION ENGINE

Seiichiro Yamada, Shizuoka, Japan, assignor to Yamaha, Hatsudoki Kabushiki Kaisha, Japan

Filed Mar. 12, 1974, Ser. No. 450,359
Claims priority, application Japan, Mar. 14, 1973, 48-29774
Int. Cl.² F01M 1/00
U.S. Cl. 123—196 CP 11 Claims



1. In combination with an internal combustion engine having a crank chamber, a lubricating oil pump comprising:

a casing having a first cavity defined therein;

a distributor coupled to said internal combustion engine, said distributor being rotatably disposed within said first cavity of said casing, and having an axial cavity defined in said distributor;

pump means for drawing oil within a second cavity defined in part by said distributor and by said pump means, and for forcing oil from at least part of said second cavity, said pump means being disposed in said axial cavity of said distributor;

reciprocating means for imparting a reciprocating force to said pump means, said reciprocating means disposed within said first cavity of said cavity, said reciprocating means, casing and distributor defining a gas chamber;

passage means extending between the crank chamber of the engine and said gas chamber for communicating variations in magnitude of the crank chamber pressure to said gas chamber, said distributor selectively controlling communication of said passage means with said gas chamber; and

one-way valve means disposed in said passage means for controlling the flow of gas within said passage means.

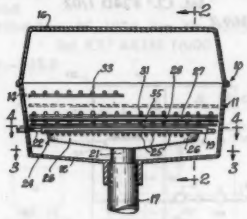
3,967,613

BARBECUE TYPE COOKING GRILL

Joseph F. Rybak, 5015 S. Lawler Ave., Chicago, Ill. 60638; Eugene C. Chamberlain, 1623 Lisbon Road, Morris, Ill. 60450; Paul E. Rybak, 138 Inner Court, New Lenox, Ill. 60451, and Stanley W. Rybak, Rte. 3, Heatherfield, Morris, Ill. 60450

Filed Jan. 16, 1975, Ser. No. 541,453
Int. Cl.² A47J 37/07
U.S. Cl. 126—41 R 2 Claims

1. A cooking grill comprising, an enclosure, a heat source, a pair of elongated pans each extending longitudinally of said enclosure and containing a body of water and adapted to be heated by said heat source to generate moist heat, a foraminous member disposed above said heat source, and a cooking grid disposed above said foraminous member for supporting a food product to be cooked, the foraminous member being of such character so as to preclude the passage of flame therethrough while permitting the passage of moist heat to effect cooking of the food product.

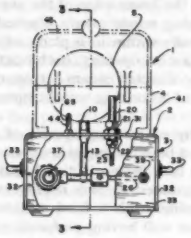


3,967,614

GAS FIRED FUSION FURNACE AND FUSION HEAD ASSEMBLY

Dale E. Stroud, Elyria, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 2, 1975, Ser. No. 538,187
Int. Cl.² F24C 3/12
U.S. Cl. 126—229 7 Claims

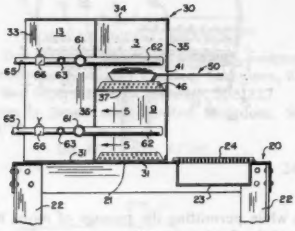


1. In an assembly of fusion furnace and mountable and demountable fusion head for applying heat to plastic pieces to be fused, said fusion head including a fusion head block and said furnace being fired with gaseous fuel conducted, by means of a gas supply conduit, from a source to a burner having a burner head projecting upwardly into said furnace, the improvement comprising a temperature sensing probe projecting upwardly into said furnace parallel to said burner head, gas flow control means operatively connected to said temperature sensing probe and to said gas supply conduit for changing the flow rate of gaseous fuel to said burner from a rapid flow to a relatively low but continuous flow and vice versa, said low flow being insufficient to raise the temperature of said fusion head beyond a predetermined level; and said fusion head block having at least one open-ended passage therethrough, one end of said passage having a burner head receiving chamber, and a well in said fusion head block receiving said temperature sensing probe when said fusion head block is mounted in said fusion furnace with the said burner head in said burner head receiving chamber, said well being spaced from, parallel to and physically separated from said burner head receiving chamber.

3,967,615
COOKING APPARATUS

Victor Petta, Jr., Arlington, Tex., assignor to The Spaghetti Importing & Warehouse Co., Dallas, Tex.

Filed Mar. 5, 1975, Ser. No. 555,426
Int. Cl.² F24D 1/02
U.S. Cl. 126—369.2 10 Claims



1. Finish cooking apparatus comprising

a steam cabinet including a plurality of individual cooking compartments opening to a front wall thereof; said steam cabinet having walls and partitions defining said plurality of cooking compartments of uniform size, each being substantially closed except for a continuously open access opening in said front wall; said access opening being just sufficiently large to pass a loaded cooking vessel;

a removable floor member supported in each compartment, providing a discontinuous support surface spaced from the compartment bottom wall and disposed in a plane adjacent to the lower edge of the access opening;

steam dispensing nozzle means diposed in each compartment generally within in a plane adjacent to the upper edge of its access opening, each nozzle means including downwardly directed steam jet apertures for directing steam toward a cooking vessel disposed on said support surface;

and a plurality of cooking vessels of uniform size each comprising a body having sidewalls and a planar bottom wall, and a laterally projecting handle; said vessel body being dimensioned to pass readily into and out of said access openings with a food portion therein; and said body bottom wall having perforations for coaction with the compartment discontinuous floor member, to permit passage of steam and moisture through the cooking vessel and its contents;

means for draining liquid from the bottom wall of each compartment.

3,967,616
MULTICHANNEL SYSTEM FOR AND A MULTIFACTORIAL METHOD OF CONTROLLING THE NERVOUS SYSTEM OF A LIVING ORGANISM

Sidney A. Ross, 6901 Katherine Ave., Van Nuys, Calif. 91405

Continuation-in-part of Ser. No. 299,842, Oct. 24, 1972, Pat. No. 3,837,331. This application Sept. 5, 1974, Ser. No. 503,468
Int. Cl.² A61B 5/05, 19/00
U.S. Cl. 128—1 C 41 Claims

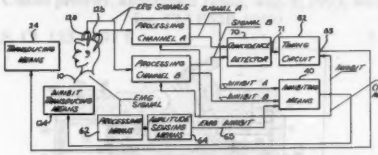
1. A method of controlling the nervous system of a living organism comprising the steps of:

a. detecting one or more bioelectrical signals from one or more topological locations in said organism's nervous system;

b. passing said one or more bioelectrical signals through a plurality of electronic means responsive to the presence of at least one electrical characteristic of interest in the waveform of a bioelectrical signal, each of said responsive means being adapted to provide a first output signal whenever said electrical characteristic of interest is present;

c. determining by electronic logic means when said plurality of first output signals, or any subset thereof, is present or absent in a predetermined manner indicative of a desired condition of said organism's nervous system, said logic means being adapted to provide a second output signal when said desired condition is indicated;

d. transducing said second output signal into a discrete sensory stimulus capable of stimulating at least one of the senses of said organism; and



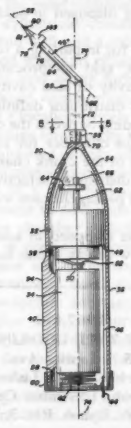
e. causing said organism to concentrate mentally so as to produce or change the state of said discrete sensory signal;

whereby said organism is trained to alter the waveform pattern of said one or more bioelectrical signals, said discrete sensory stimulus being presented to said organism as a reward for producing our suppressing said electrical characteristics of interest in said one or more signals, thereby achieving said desired condition of said nervous system.

3,967,617
MECHANICAL GUM MASSAGER

Paul P. Krolik, Chicago, Ill., assignor to Alston, Inc., Elmhurst, Ill.

Continuation-in-part of Ser. No. 526,740, Nov. 25, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,816
Int. Cl.³ A61H 1/00, 7/00
U.S. Cl. 128—36 23 Claims



1. A mechanical gum massaging device which comprises:

a vibratory mechanism suitable for holding in the user's hand and adapted to produce cyclical movement about the longitudinal axis of said mechanism when thus held;

a vibrating shank free at one end and attached at the other end to said vibratory mechanism with a portion of its longitudinal axis generally coinciding with the longitudinal axis of the vibratory mechanism, the transverse cross sectional dimensions of said vibrating shank being smaller

than those of said vibratory mechanism, the free end of said shank tracing a generally elliptical path in a first plane perpendicular to the longitudinal axis of said vibratory mechanism when said device is held in the user's hand during operation of the device, said elliptical path having a major axis and a minor axis;

a resilient stimulator element mounted at the free end of said shank, the longitudinal axis of the operative portion of said stimulator element extending outwardly from said vibratory mechanism in a direction such that a second plane containing said direction and the longitudinal axis of said vibratory mechanism is substantially perpendicular to the major axis of said elliptical path, said shank being free of any other stimulator element facing said first mentioned stimulator element in opposed relationship thereto; and

means for actuating said vibratory mechanism.

3,967,618

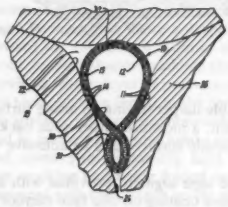
DRUG DELIVERY DEVICE

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 185,208, Sept. 30, 1971, Pat. No. 3,896,819, which is a continuation-in-part of Ser. No. 42,786, June 2, 1970, Pat. No. 3,854,480, which is a continuation-in-part of Ser. Nos. 812,116, April 1, 1969, Pat. No. 3,598,122, and Ser. No. 864,175, Oct. 6, 1969, abandoned. This application Mar. 6, 1975, Ser. No. 555,840

Int. Cl.² A61F *5/46;* **A61M** *31/00*

U.S. Cl. 128—130 **7 Claims**



1. A method of interfering with the reproductive process of a female mammal comprising continuously administering a contraceptive agent within the uterine cavity of said female over a prolonged period of time by:

A. inserting into the uterine cavity an intrauterine device comprising:

a. a reservoir comprising an agent in a liquid carrier material permeable to the passage of the agent, said agent comprising a dissolved portion and an undissolved portion that serves to replace said dissolved portion, the reservoir being confined within;

b. an enveloping shaped membrane comprised of a biologically acceptable material insoluble in mammalian body fluid, capable of keeping its integrity during said prolonged period and formed at least in part of a material permeable by diffusion to passage of said agent at a rate which is lower than the rate of permeability of said agent through said carrier;

B. releasing said agent from said reservoir into the uterine cavity at a controlled, continuous, contraceptively effective rate by diffusional passage through said shaped membrane; and;

C. continuously replacing the dissolved agent released from the reservoir by continuously dissolving said undissolved agent in the carrier material.

3,967,619

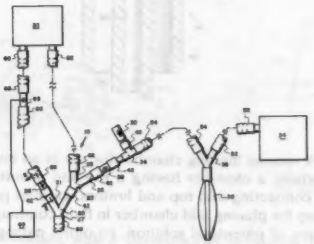
APPARATUS AND METHOD FOR INTERMITTENT MANDATORY VENTILATION

Eddie W. Story, Rte. 2, Box 4, La Center, Wash. 98629, and Jerald L. Liskey, 23300 W. Arata Road, No. 92, Troutdale, Oreg. 97060

Filed Nov. 15, 1974, Ser. No. 523,966

Int. Cl.² A61M *16/00*

U.S. Cl. 128—145.8 **11 Claims**



1. A device for connecting to a patient the components of an intermittent mandatory ventilation system of the type including an intermittent source of pressurized air having inspiration and expiration tubes respectively, a volume measuring means connected to said expiration tube for measuring the volume of air exhaled by said patient and a continuous separate source of pressurized air, said device comprising:

a. a tubular assembly having means defining five interconnected ports, a first port of which is for connecting to the respiratory system of a patient, a second port of which is for connecting to the inspiration tube of said intermittent source of pressurized air, a third port of which is for connecting to the expiration tube of said intermittent air source, and a fourth port of which is for connecting to said continuous air source;

b. first one-way valve means mounted within said tubular assembly between said first and third ports for permitting air to flow from said first port to said third port while preventing a reverse flow of said air;

c. second one-way valve means mounted within said tubular assembly separating said first, second and third ports respectively from said fourth port and responsive to the differential-pressure on either side of said second valve means permitting air to flow from said fourth port toward said first, second and third ports when patient-generated inspiration pressure is less than the pressure at said fourth port by a predetermined amount, and for preventing a reverse flow of said air;

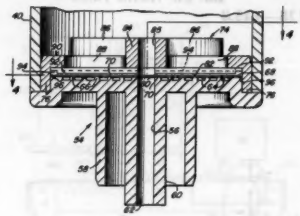
d. said fifth port of said tubular assembly being positioned on the same side of said second one-way valve means as said fourth port and having a third one-way valve means associated therewith responsive to the pressure at said fourth port for permitting air to flow from within said tubular assembly outwardly through said fifth port during patient expiration so as to prevent the pressure at said fourth port from exceeding patient-generated expiration pressure by said predetermined amount, and thereby prevent air flow from said fourth port through said second valve means toward said first, second and third ports during patient expiration, said third one-way valve means also including means for preventing a reverse flow of said air through said fifth port.

3,967,620

VOLUME LIMITING CHAMBER

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, New York, N.Y.

Filed Sept. 10, 1974, Ser. No. 504,733
Int. Cl.[2] A61M 5/14
U.S. Cl. 128—214 C 36 Claims



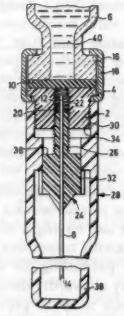
1. A volume limiting chamber for use in an intravenous set comprising a chamber having a top and a bottom and side walls connecting said top and bottom, an inlet passageway in said top for placing said chamber in fluid communication with a source of parenteral solution, an outlet passageway in said bottom for placing said chamber in fluid communication with an intravenous needle, indicia on said chamber for indicating the amount of parenteral solution in said chamber, a membrane valve positioned in said chamber and cooperating with said outlet fluid passageway so that all parenteral solution in said chamber flows through said membrane valve, said membrane valve comprising a material which when wet will pass parenteral fluid but will not pass air at normal intravenous administration pressures, and means for bypassing said membrane valve, said means allowing air to enter said chamber through said bottom from underneath said membrane valve when said membrane valve is wet.

3,967,621

NEEDLE HOLDER FOR MEDICAL SYRINGES, VIALS, OR THE LIKE

Lothar Schwarz, Belchenstrasse 1, 75 Karlsruhe 51, Germany

Filed July 14, 1975, Ser. No. 595,634
Claims priority, application Germany, July 16, 1974, 2434046
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—216 15 Claims



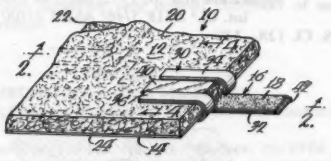
1. A needle holder for medical syringes, in particular injection syringes and syringes for the removal of body fluids, and for vials and the like with a base body for the closure of the end of a preparation holder that presents a closure puncturable by a hollow needle, a hub part fastened to the hollow needle which is screwed by means of a first threaded connection with a base body to a work position in which an end of the needle punctures the closure of the preparation holder, a protective sleeve having an open end which is rotatably and detachably mounted on the base body and which surrounds the hub part and the therewith affixed hollow needle, and an axial gear tooth system provided between the hub part and the protective sleeve which connects and provides for common rotation of these parts while permitting relative axial movement between an initial threaded position of the hub part and the work position of the hub part; characterized in that between the body (2) and protective sleeve (28) a second threaded connection (30) is provided with a thread direction opposite the first threaded connection (22, 26) so that with the unthreading of the protective sleeve (28) from the base body (2) the hub part (24) which is drivingly connected to the protective sleeve (28) by the axial gear tooth system (32) is threaded to a work position.

3,967,622

DISPOSABLE DIAPER WITH DIVARICATED ADHESIVE TABS

Talivaldis Cepuritis, Kenilworth, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 7, 1975, Ser. No. 575,280
Int. Cl.[2] A41B 13/02
U.S. Cl. 128—287 11 Claims



1. A disposable diaper having an inside surface for direction toward an infant, a moisture-impervious backing sheet defining a diaper outside surface, and an adhesive tab means comprising:

an elongated tape segment provided with a pressure-sensitive adhesive coating on one face thereof and having first and second end portions,

said first end portion of said tape segment being permanently attached by means of said adhesive coating to said outside surface at a marginal location thereon and said second end portion being divided longitudinally into at least three separate strips comprising a central strip and a pair of marginal strips on opposite sides of said central strip,

said central strip providing securement means for fastening the diaper about said infant and said marginal strips being adhesively attached to said diaper inside surface at a marginal location thereon, and

release means providing a release surface releasably adhered to the adhesive coating on said central strip and removable therefrom.

3,967,623

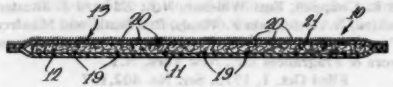
DISPOSABLE ABSORBENT PAD

George A. M. Butterworth, Western Springs, and Robert T. Elias, Downers Grove, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 30, 1975, Ser. No. 591,747
Int. Cl.[2] A41B 13/02; A61F 13/16
U.S. Cl. 128—287 12 Claims

1. An absorbent pad comprising a flexible, body fluid-impermeable backing sheet, a layer of absorbent material on said backing sheet, and a soft, body fluid-permeable facing

sheet overlying said absorbent material; said facing sheet being a perforate, substantially hydrophobic thermoplastic



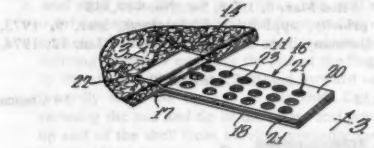
web having an integral fibrous outer surface made up of elementary fibers carried by said web.

3,967,624

DISPOSABLE DIAPER WITH TAB FASTENERS HAVING A PERFORATED COVER STRIP

John P. Milnamow, Barrington, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 4, 1975, Ser. No. 565,295
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 6 Claims



1. A disposable diaper which comprises a moisture-impermeable backing sheet forming a diaper outside surface for direction away from an infant when the diaper is worn by that infant, a moisture-retaining layer adhered to the backing sheet and having a facing which forms a diaper inside surface for direction toward the infant, tab fastener means having a fixed end secured to said diaper backing sheet and a free working end provided with a layer of pressure-sensitive adhesive presenting a tacky surface facing in the same direction as the diaper inside surface, a means for removably holding said free working end in contact with said inside surface comprising a perforated cover strip releasably held on said tacky surface; said free working end being folded over the edge of the diaper in abutment with said diaper inside surface and said tacky surface defining a limited adhesive contact with said facing at a plurality of attachment points through the perforations in said cover strip.

3,967,625

DEVICE FOR STERILIZING THE HUMAN FEMALE OR MALE BY LIGATION

In Bae Yoon, 9508 Falls Bridge Lane, Potomac, Md. 20854

Division of Ser. No. 383,475, July 30, 1973, Pat. No. 3,870,048. This application Dec. 23, 1974, Ser. No. 535,942
Int. Cl.² A61B 17/12
U.S. Cl. 128—326 21 Claims

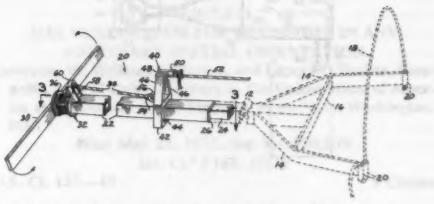
1. A ring applicator device for use in the sterilization of a human being which comprises an inner tube and an outer tube, said inner tube being slidably disposed within said outer tube, said inner and outer tubes having corresponding cut-away sections at their respective proximal end portions, a conduit means disposed in the lower portion of the inner tube, forceps means slidably disposed within said conduit means, means for moving said forceps means into and out of the conduit means, an optical viewing device slidably disposed within the inner tube and means for axially displacing said outer and inner tubes relative to each other, thereby removing an elastic ring from the end of said inner tube.

3,967,626

CALF EXTRACTOR

Wendell L. Hedges, P.O. Box 67, Seiling, Okla. 73663

Filed Mar. 12, 1975, Ser. No. 557,851
Int. Cl.² A61D 1/08; A61B 17/42
U.S. Cl. 128—352 1 Claim



1. In combination with a parturificient breeching bar of general U-shape having a bar portion adapted to transversely engage the rump of a cow and having legs adapted to extend forwardly along the haunches of a cow and having a socket opening opposite said legs and projecting therefrom a plane common with said legs, the improvement comprising:

an elongated shaft having means at one end portion for axial connection with the socket;

windlass means including a reel axially journalled by the other end portion of said shaft;

handle means for rotating said windlass means;

friction grip means including a sleeve-like frame transversely and loosely surrounding said shaft intermediate its ends and being slidable therealong when disposed in a plane normal to the longitudinal axis of said shaft, said sleeve-like frame having an arm projecting laterally of said shaft;

an elongated flexible obstetrical member;

loop means connected with said frame arm for connection with one end portion of said obstetrical member, said windlass means including a windlass line connected with said friction grip means generally opposite its connection with said obstetrical member and said shaft; and,

pully means including a pulley mounted on said shaft adjacent

said reel for guiding said windlass line toward and away from said reel when the latter is rotated in a windlass line reeling in and paying out direction, respectively,

whereby tension simultaneously applied to said obstetrical member and said windlass line permits movement of said friction grip means relative to said shaft and release of tension on either said obstetrical member or said windlass line tilts the plane of said friction grip means toward the axis of said shaft to a friction gripping and binding position thereon.

3,967,627

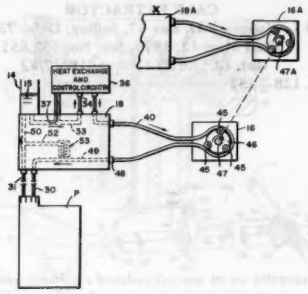
HOT/COLD APPLICATOR SYSTEM

Billy E. Brown, Indianapolis, Ind., assignor to Moore-Perk Corporation, Indianapolis, Ind.

Filed Nov. 18, 1974, Ser. No. 524,572
Int. Cl.² A61F 7/00
U.S. Cl. 128—400 13 Claims

1. Apparatus for selectively heating or cooling a local area of the body comprising: a source of heat transferring liquid; an applicator pad adapted to be applied to said local area and including means defining a conduit for carrying said liquid through said pad; heat exchanger means receiving said liquid

and including thermoelectric diode means for producing heat when an electrical potential of one polarity is applied thereto and for absorbing heat when an electrical potential of the opposite polarity is applied thereto; pump means for pumping said liquid from said source through said heat exchanger



means and said applicator pad; and control circuit means including temperature-sensitive means responsive to the temperature of said liquid for controlling the polarity and duration of application of an electrical potential to said thermoelectric diode means under operator control.

3,967,628

SKIN ELECTRODE

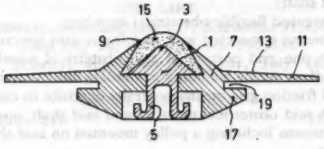
Jakob Vredenbregt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,795

Claims priority, application Netherlands, Feb. 21, 1974, 7402355

Int. Cl.² A61N 1/04

U.S. Cl. 128—417 4 Claims



1. A skin electrode comprising

a jacket of flexible insulating material having a central portion and a peripherally extending flat edge portion about said central portion for non-slipping contact with skin;

an electrically conductive core extending through the central portion of said jacket and held thereby, said core having at one end a generally conically shaped pointed portion, an apical portion thereof protruding out of the plane of said flat edge portion of said jacket and pointing perpendicularly away therefrom, said core having means for making electrical contact thereto at the other end thereof; and

spongy absorbent material covering at least said apical portion of said core, said jacket having a tapered annular flange extending from said central portion and surrounding said conically shaped portion of said core to leave a space therebetween, the peripheral region of said spongy material being received and held in said space between the flange and the conically shaped portion of said core, said annular flange forming a hole through which said spongy material covering said apical portion protrudes for contact with skin.

3,967,629

BICYCLIC FRAGRANCE MATERIALS AND PROCESSES THEREFOR

Robert L. Chappell, East Windsor, N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,157

Int. Cl.² A24B 13/00, 15/04

U.S. Cl. 131—144 2 Claims

1. A process for treating a tobacco which comprises adding thereto a small but effective amount of 1,2,3,3,4,5,6-heptamethyl bicyclo-[2.2.2]-oct-5-en-2-ol to alter the organoleptic properties of the tobacco.

3,967,630

BRISTLE HAIR CURLER AND HAIR CURLER MAGAZINE

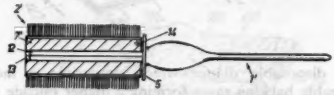
Klaus Peter Zuhlsdorff, Cologne, Germany, and Paul Schenk, Neuchatel, Switzerland, assignors to Fa. TONDO-Werk Adolf Noss, Solingen, Germany

Filed Mar. 8, 1974, Ser. No. 449,388

Claims priority, application Switzerland, Mar. 9, 1973, 3559/73; Germany, June 29, 1973, 2333101; Jan. 12, 1974, 2401398

Int. Cl.² A45D 2/00

U.S. Cl. 132—40 14 Claims



1. A bristle hair curler combination comprising:

a generally cylindrical hair curler element having an elongated core with radially oriented bristles attached thereto in the manner of a brush roll, the curler core including a plurality of axially parallel longitudinal engagement surfaces;

a detachable curler handle engaging the hair curler element from one axial end thereof so as to form an axial extension of the curler element;

means defined by the curler handle for frictionally engaging the curler core on several of its engagement surfaces in such a manner that the disengagement of the curler element from the handle requires a predetermined axial pull which is considerably in excess of the weight of the hair curler element; and

wherein said core engaging means of the handle includes at least one axially extending retaining member on the handle defining several axially parallel engagement surfaces which are adapted to cooperate with said engagement surfaces of the curler core.

3,967,631

FINGERNAIL CAP

Kathleen M. Kosal, 8900 E. Jefferson, Apt. 612, Detroit, Mich. 48214

Filed Jan. 17, 1975, Ser. No. 541,942

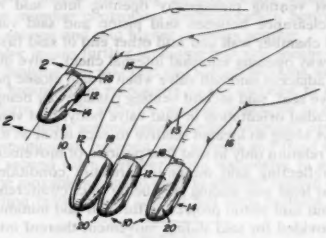
Int. Cl.² A45D 29/00

U.S. Cl. 132—73 1 Claim

1. A fingernail and finger tip cap, comprising, in combination:

a. a longitudinally elongated, generally tubular shell constructed of generally rigid but resilient material and having a longitudinal slit defining means therein, said shell being provided with a cavity extending throughout the length thereof and having an open end and a closed tip end, said shell being arranged in telescopic relation over a nail and adjacent tip of a finger for encasing and protecting same, the slit defining means extending from the

open end of the shell to enable frictional gripping engagement of the shell with the finger on which it is mounted, the tip end of the shell tapering to conform with the contour of the tip end of the finger with the remainder of the shell conforming with the contour of the fingernail and adjacent portions of the finger; and



b. said shell including an imperforate top wall disposed in overlying spaced relation to the fingernail throughout its entirety, the bottom wall of the shell including an opening defining a window exposing the pad of the finger encased by the shell, said opening having a forward edge spaced inwardly from the tip end of the shell for completely encasing the nail and tip of the finger and preventing the tip end of the shell from moving upwardly in relation to the tip of the finger.

3,967,632
ARRANGEMENT FOR THE FLUID TREATMENT, ESPECIALLY ETCHING, OF OBJECTS IN ASSEMBLY-LINE-LIKE FASHION

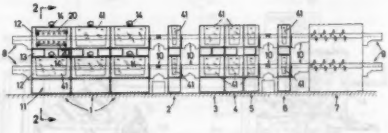
Günther Herrmann, Furth, and Adam Pill, Auenwald-Mittelbruden, both of Germany, assignors to Adam Pill, Auenwald-Mittelbruden, Germany

Filed June 17, 1974, Ser. No. 479,994

Claims priority, application Germany, June 27, 1973, 2332547

Int. Cl.² B08B *3/02*

U.S. Cl. 134—83 **14 Claims**



1. An arrangement for the fluid treatment, particularly etching, of objects, particularly printed circuits, mold sections, and the like, in assembly-line-like fashion, comprising, in combination, a closed treatment fluid supply chamber; a first treatment chamber located above said treatment fluid supply chamber; at least one additional treatment chamber located above said first treatment chamber, said treatment chambers being separated from each other by separating walls, each of said treatment chambers having a side wall; an intermediate chamber between said treatment chambers and partly bounded by said separating walls, said intermediate chamber spacing said treatment chambers from one another; conveyor means for conveying objects along a first predetermined path leading through said first treatment chamber at a first speed, and along a second predetermined path leading through said additional treatment chamber at a second speed; treatment fluid pumping and emitting means operative for pumping treatment fluid up from said treatment fluid supply chamber and for discharging the thusly pumped treatment fluid onto objects in both said first and said additional treatment chambers; control equipment in said intermediate chamber for controlling the operation of the arrangement; and at least one observation and access window of trapezoidal shape mounted in each respective side wall for sliding with respect thereto in a predetermined direction between a closed and an open position and having marginal portions diverging in said direction and engaging said side wall when said window is in said closed position thereof, whereas a slight movement of said window in said direction dissociates said marginal portions from said side wall so that movement of said window towards said open position is facilitated even when said window is jammed in said side wall.

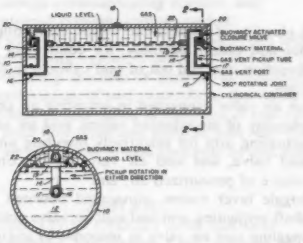
3,967,633
GAS VENT SYSTEM FOR OPERATION IN ANY ARBITRARY SPATIAL ORIENTATION

Lawrence W. Hallanger, Oxnard, and Leroy W. Tucker, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1975, Ser. No. 580,078

Int. Cl.² F16K *17/36*

U.S. Cl. 137—43 **9 Claims**



1. A vent system operable for exhausting accumulated gas from above a liquid in an enclosed liquid container regardless of the arbitrary spatial orientation the container may be positioned, comprising:

a. an enclosed container for liquid;

b. a gas vent port located centrally in each of at least two opposite far walls of said container;

c. a floatable gas venting tube for each said vent port respectively; each venting tube having one end attached to a respective gas vent port by means of a leakproof rotating joint and being operable to rotate radially 360° in either direction about said vent port, the opposite end of each said venting tube being the gas intake end thereof;

d. buoyant means for maintaining the gas intake end of each said gas venting tube above the level of any liquid in said container, within the limitation of the length of each said tube as the orientation of said container changes;

e. valve means on the gas intake end of said respective venting tubes operable to close and prevent the intake of any liquid into said tubes whenever the intake end is below the level of any liquid in said container.

3,967,634
FLOW RATIO CONTROL SYSTEM

William C. Scherer, Minneapolis, and Michael Dwain Jines, Owatonna, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Nov. 6, 1975, Ser. No. 629,378

Int. Cl.² G05D *11/035*

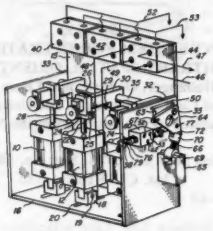
U.S. Cl. 137—99 **16 Claims**

1. An apparatus for delivering an adjustable fluid flow ratio of two or more fluids from respective fluid supply sources, comprising,

a. a plurality of cylinder and piston assemblies, each pivotally anchored at one end and having a reciprocable piston rod attached to its piston and projecting from its other end;

b. a plurality of levers pivotally attached, each to a respective piston rod, by means of an attachment link which is slideable along said lever;

c. a rotatable shaft rigidly attached to all of said levers, and having a projecting arm for translating its angular motion to arcuate motion of said arm end;



d. a plurality of air-actuated valves, each coupled to a cylinder and piston assembly, for controlling the fluid flow direction into and out of said cylinder and piston assemblies;

e. an air valve connected in actuating air coupling to said plurality of air-actuated valves, said air valve having an actuating arm for selectively directing air flow through said valve, and said air valve being connectable to a source of pressurized air; and

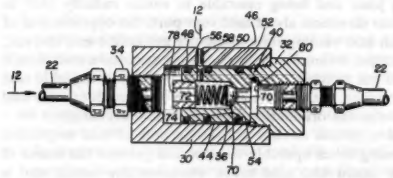
f. toggle lever means, connected between said rotatable shaft projecting arm and said air valve actuating arm, for toggling said air valve in response to angular position of said rotatable shaft.

3,967,635

VALVE FOR CARBONATOR

Andrew I. Sealfon, 305 W. 13th St., New York, N.Y. 10014, and Paul Rosenbaum, 84-57 Goldington Court, Rego Park, N.Y. 11374

Filed Nov. 7, 1974, Ser. No. 521,654
Int. Cl.² F16K *45/00*
U.S. Cl. 137—102 **1 Claim**



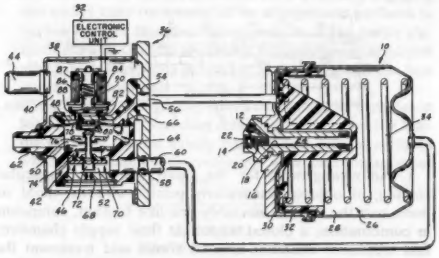
1. A valve for use in a carbonator to selectively permit the flow of water to a source of carbon dioxide, and during intervals of non-flow of said water, to minimize back-up of said carbon dioxide into said source of water, said valve comprising a valve body having at opposite ends a water inlet and a water outlet, said valve body having between said inlet and outlet a cylindrically shaped internal wall bounding a piston chamber of a prescribed diameter, a piston disposed for sliding movement in said chamber between first and second positions of movement respectively reflecting minimum and maximum pressures of said water and having a corresponding external shape and of a diameter size defining a minimum sliding clearance between said piston and said valve body internal chamber wall, an internal check valve including a valve seat and a ball valve in facing relation therewith in said piston between said water inlet and outlet, a cooperating pair of first and second passageways, said first venting passageway being formed in said piston in communication with, and oriented transversely of, said internal check valve, one end of said first venting passageway opening into said minimum sliding clearance between said piston and said valve body internal chamber wall and said other end of said first venting passageway opening into said internal check valve in the area thereof adjacent said ball valve when in said closed position in said valve seat, said second venting passageway being formed with a radial orientation in said valve body, said venting passageways being so located relative to each other as to have an aligned relation only in said first position of movement of said piston reflecting said minimum pressure condition of said water, at least one sealing ring being in circumferential position about said piston projecting through said minimum clearance provided for said sliding movement thereof into sealing contact against said valve body internal wall, said sealing ring being located between said second venting passageway and said valve seat of said check valve so that said sealing ring assumes an interposed position between said cooperating first and second venting passageways in said second position of movement of said piston and when said internal check valve is open preparatory to water flow therethrough to thereby minimize the leakage of said flowing water through said venting passageways, but when said check valve is closed and said water is not flowing therethrough should any carbon dioxide then flow into said valve through said water outlet said carbon dioxide is vented to atmosphere through said aligned venting passageways.

3,967,636

VALVE FOR FORCE-REVERSING MODULATOR

Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 415,264, Nov. 12, 1973, Pat. No. 3,840,279. This application July 24, 1974, Ser. No. 491,600
Int. Cl.² F15B *13/044*
U.S. Cl. 137—106 **5 Claims**



1. In a valve:

a housing defining a bore therewithin divided into a first section, a second section, and a third section;

first restricting means permitting communication at a controlled rate between said first and second sections;

second restricting means permitting communication at a controlled rate between said third section and a higher pressure source;

passage means permitting unrestricted fluid communication between said second section and a lower pressure source;

first and second outlet ports communicating with said first and third sections respectively, whereby said first outlet port is normally communicated to said lower pressure source through said first restricting means and said second section and said second outlet port is normally com-

municated to said higher pressure source through said thrid section and said second restricting means;

valve means actuable to communicate said first section to said higher pressure source and said third section to said lower pressure source whereby, upon actuation of the valve means, the first outlet port is communicated to said higher pressure source and said second outlet port is communicated to said lower pressure source;

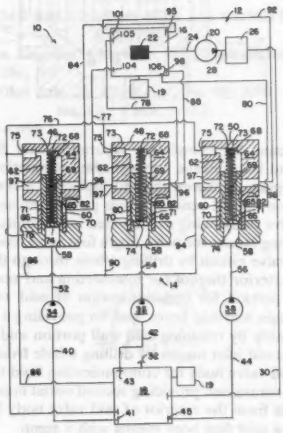
said valve means including an electrically actuated first valve member controlling communication between said first section and said higher pressure source;

said valve means further including movable means dividing said housing into said first and second sections, said movable means being responsive to the increase in the fluid pressure level in said first section to actuate in response thereto, and a second valve member normally preventing communication between said second and third sections, said second valve member being responsive to actuation of the movable means to open to thereby initiate communication between said second and third sections.

3,967,637
APPARATUS FOR DEAERATING FLUIDS

George James Jackson, Peoria County, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 525,538, Nov. 20, 1974. This application Apr. 11, 1975, Ser. No. 567,170
Int. Cl.² F16K *24/00*
U.S. Cl. 137—110 **2 Claims**



1. A lubricating system including means for reducing the amount of air contamination therein, comprising:

a non-vented primary reservoir;

a vented sump adapted to receive fluid pumped from said reservoir;

a frame to which said reservoir and said sump are affixed in rigidly-fixed relationship to one another;

a plurality of valves, each of which comprises a body including a bore longitudinally therethrough ending in a seat adjacent one end thereof, a port communicating the other end of said bore with the exterior of said body, a hole through said body communicating with said bore intermediate said port and said seat, a fluid-flow entrance communicating with said seat, an opening therethrough communicating with said bore intermediate said port and said hole, and a fluid-flow entrance communicating with said seat;

a poppet-type spool slidably disposed in said bore, one end of said spool being adapted to sit against said seat, said spool including a restricted orifice communicating said one end thereof with said bore and a passageway therein intermediate the end thereof; and

means for biasing said one end of said spool to sit against said seat;

said entrance being adapted to receive fluid flow including entrapped air from said sump and direct said flow against said one end of said spool in opposition to the force exerted by said biasing means, said orifice being adapted to conduct air and fluid therethrough into said bore and out of said port and therefrom to said reservoir when said spool is not displaced against the force exerted by said biasing means sufficiently to allow said fluid to flow along said bore and out said hole, said hole being adapted to conduct said fluid therethrough when said spool is displaced by the force of said flow acting against the force of said biasing means sufficiently to allow said fluid to flow along said bore and out said hole and therefrom to said reservoir, said passageway being adapted to communicate said opening with said sump when said spool is displaced against the force exerted by said biasing means sufficiently to allow said fluid to flow out said hole whereby air entrapped in said reservoir escapes therefrom via said opening and said passageway and into said sump;

a port-sump communicating conduit;

a reservoir-opening communicating conduit;

a hole-reservoir communicating conduit; and

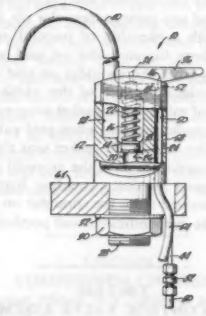
a sump-entrance communicating conduit;

each of said sump-entrance conduits of said valves terminating at spaced-apart regions of said sump and each of said reservoir-opening conduits of said valves terminating at spaced-apart regions of said reservoir so that irrespective of the rotation of said frame at least one of said valves is directing fluid flow from said sump to said reservoir and directing air entrapped in said reservoir to said sump.

3,967,638
COMBINATION FAUCET AND AIR GAP

Raymond A. Tondreau, San Marcos, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

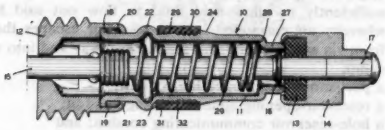
Filed Aug. 6, 1975, Ser. No. 602,193
Int. Cl.² F16K *24/00*
U.S. Cl. 137—216 **6 Claims**



1. A combination faucet and antisyphon break fixture which comprises; a metallic body having a valve controlled passage with a spout for dispensing purified water; a second passage in said body for introducing brine from a reverse osmosis purifier upwardly into said body; a third passage in body for releasing said brine downwardly from said body; and means for directing the flow of said brine from said second passage past an antisyphon break into said third passage; in which the improvement comprises:

a. said second passage comprising a plastic tube protecting the adjacent surface of the interior of said body from corrosive effects of said brine;
b. said third passage comprising a plastic tube protecting the adjacent surface of the interior of said body from corrosive effects of said brine; and
c. said means for directing said flow of said brine from said second passage into said third passage comprising a plastic channel carrying overflow from said second passage into said third passage.

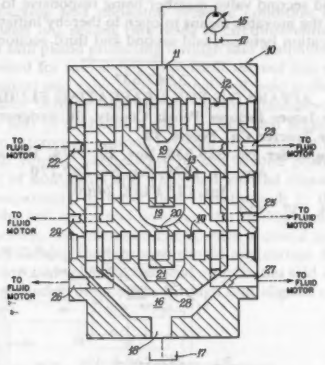
3,967,639
TIRE VALVE CORE
Charles P. Mottram, Stratford, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed Jan. 2, 1975, Ser. No. 538,056
Int. Cl.² F16K 15/20
U.S. Cl. 137—234.5 3 Claims



1. In a tire valve core including a tubular barrel and an externally threaded machined head, the tubular barrel terminating at one extremity in an outwardly directed enlarged flange receivable within said machined head and said head being provided with a relatively thin annular wall portion terminating in an inwardly directed extremity to insure retention therein of the annular flange on said tubular barrel, a plastic gasket surrounding said barrel substantially centrally of the length thereof, and valve means extending through said tubular barrel and machined head; the improvement which includes a peripheral bead formed on said barrel, the inner face of said bead being constituted by a substantially perpendicular wall portion creating a sharply defined shoulder at the point of juncture with the outer surface of said barrel, said barrel further being provided with a slightly enlarged annular rib having an inwardly tapered outer surface and providing a sharply defined shoulder at the point of juncture with said barrel, said rib being spaced from said peripheral bead to provide a gasket seat therebetween the extent of said seat being determined by the opposed sharply defined shoulders on said peripheral bead and enlarged annular rib, said gasket seat being provided with a plurality of parallel annular grooves spaced inwardly from the shoulder on said annular rib and extending inwardly from the shoulder on said enlarged annular rib over approximately 50% of the width of said gasket seat, the material of said plastic gasket progressively entering into said spaced annular grooves when said valve core is positioned within a valve stem, said gasket seat also including an inwardly tapered portion beyond the grooved portion thereof said inwardly tapered portion extending from adjacent the groove farthest removed from the shoulder on the annular rib to the bottom of the perpendicular wall portion on the peripheral bead.

3,967,640
HYDRAULIC CONTROL VALVE ASSEMBLY WITH DIVERSE CIRCUIT ADAPTABILITY
Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 419,517, Nov. 28, 1973, abandoned.
This application Jan. 31, 1975, Ser. No. 545,889
Int. Cl.² F16K 11/07, 27/04
U.S. Cl. 137—269 6 Claims

4. A pre-cored valve body comprising:
first and second identical, adjacently positioned valve spool receiving bore means for receiving identical valve spool means, each said bore means including first and second motor port means for communicating with a double-acting fluid motor;
said bore means adapted to receive identical valve spool means for cooperating with said bore means for controlling communication of fluid between said bore means and said motor port means;
first and second central bypass passage means for separately communicating respectively with said first and second bore means;
inlet means for communicating one of said bore means with fluid supply source;
substantially U-shaped return passage means having separate legs for communicating with each of said bore means adjacent each end thereof outward of said motor port means for communicating return fluid to a sump;

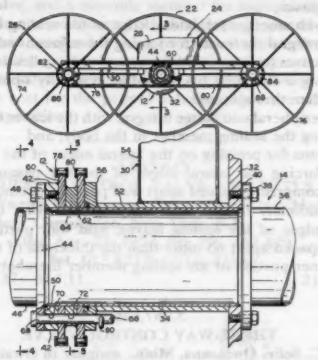


wall means for completely separating said first and said second bore means between the intersection of said return passage therewith, and including a removable wall portion at said central bypass passage means; and,
said valve body being cast formed into a unitary body constituting means for providing a first valve assembly having one valve circuit by drilling a hole through the body from the exterior thereof for intersecting and removal of said wall portion for communication of said central bypass passages and said bores, and for providing a second valve assembly by retaining said wall portion and by provision of second inlet means by drilling a hole from the exterior of said valve body for communicating fluid to said second bore means and providing second outlet means by drilling a hole from the exterior of said valve body for communicating said first bore means with a sump.

3,967,641
CLUTCH ASSEMBLY
Joseph A. Bedard, and Roger G. Hills, both of Eugene, Oreg., assignors to IRECO Industries, Inc., Eugene, Oreg.
Continuation of Ser. No. 385,969, Aug. 6, 1973, abandoned.
This application Jan. 31, 1975, Ser. No. 545,990
Int. Cl.² A01G 25/02; B05B 3/12
U.S. Cl. 137—344 3 Claims

1. In an irrigation line move,
a drive tube having a first pipe coupling flange at one end thereof and a collar on that end portion of the drive tube and keyed to the drive tube,
a bull gear secured rigidly to and sealed to the other end of the drive tube,
a journaling tube rotatably mounting the drive tube,
a sprocket unit mounted rotatably on the drive tube between the flange and the collar and including a pair of sprockets and a spacer between the sprockets and keyed to the sprockets,

the pipe coupling flange and the collar having aligned holes, the sprocket unit having holes adapted to be aligned with the holes in the flange and the collar,



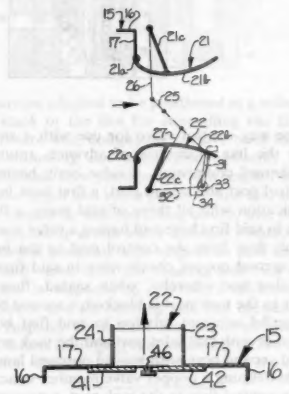
and keying means comprising a removable pin adapted to be inserted through the holes to selectively key the sprocket unit to the drive tube.

3,967,642

AIR VOLUME REGULATOR FOR AIR CONDITIONING SYSTEMS

Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aeronca, Inc., Pineville, N.C.

Filed July 25, 1974, Ser. No. 491,696
Int. Cl.² F16K *31/12*
U.S. Cl. 137—499 **18 Claims**



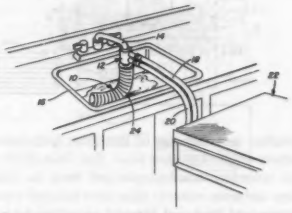
1. An air distribution unit for use in air conditioning systems for controlling the flow of conditioned air into an air-conditioned room or zone and comprising a regulator housing adapted for receiving therethrough a flow of conditioned air supplied to the housing, and an air volume regulator mounted in said housing and operable for maintaining the flow of air through the housing at a substantially constant volumetric flow rate regardless of fluctuations in the supply pressure thereof, said regulator comprising a pair of airfoils positioned in said housing in spaced apart relation to one another so as to receive therebetween the flow of air passing through the housing, said airfoils having generally parallel spaced apart leading edges and having facial surfaces extending downstream from the leading edges of the airfoils and exposed to the flow of air thereacross, means mounting said airfoils along the leading edges thereof for pivotal movement in said housing and in inwardly spaced relation from the walls of the housing, and linkage means interconnecting said pivotally mounted airfoils for effecting unison movement of the airfoils toward or away from each other, the flow of air across the facial surfaces of the airfoils exerting a force thereon to pivotally move the airfoils toward or away from each other in response to fluctuations in upstream pressure to vary the spacing between the airfoils through which the air flows and thereby maintain the flow of air from the regulator substantially constant.

3,967,643

SPLASH GUARD

Cleo Margaret Lutringer, Rte. 1, Box 180, El Campo, Tex. 77437

Filed Aug. 26, 1974, Ser. No. 500,901
Int. Cl.² E03C *1/00*
U.S. Cl. 137—562 **3 Claims**



1. In combination, a sink construction including a lower drain and a water faucet spaced above the sink, a combined filling and draining attachment for a water using domestic cleaning apparatus, said attachment being connected to said faucet for receiving water therefrom and including a water outlet in generally vertical registry with and opening downwardly toward said drain, an upstanding elongated flexible tube member of generally circular cross-sectional shape, said tube member being axially compressible and including means yieldingly biasing the tube member toward its maximum length fully extended condition, a fitting secured in, reinforcing and closing the upper end of said tube member and including means defining an inlet opening through said fitting into the upper end of said tube member and of a cross sectional area considerably smaller than the effective internal cross sectional area of said tube member, said fitting being sealingly connected to the outlet of said attachment for receiving the discharge of water from said cleaning apparatus, said tube member being of an effective length, when expanded toward its maximum length condition, greater than the spacing of said water outlet of said attachment above said drain, whereby the lower end of said tube member made be inserted into or rest over the drain.

3,967,644

COMPRESSOR CONTROL

Arthur St. Laurent, Minoa, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 384,774, Aug. 1, 1973, Pat. No. 3,855,813.
This application July 5, 1974, Ser. No. 485,879
Int. Cl.² F16K *15/02*
U.S. Cl. 137—512.1 **1 Claim**

1. A combination equalizer and over pressure control for use with fluid compressors comprising:

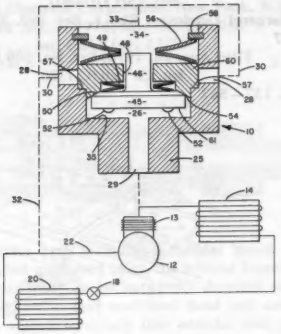
a. a housing defining a chamber with a flange-like wall at one end thereof;

b. means forming a passage adapted to conduct pressure fluid, and including a first piston-like member having a

first relief port therethrough, and when in a first position preventing any flow of fluid through a second relief port;

c. means for closing said relief port including a second piston-like member disposed upstream of said first piston-like member, said first and second members being movable relative to one another;

d. control means including first force supplying means disposed between said first and second piston-like members to bias said second member away from said first member, said second member moving into sealing abutment with said first member to close said first relief port when fluid pressure acting on said second member exceeds a predetermined value, and second means providing a force to



maintain said first and second members in position relative to said second relief port to prevent any fluid flow therethrough, said first and second members moving jointly at a predetermined over pressure condition to open said second relief port; and

e. said first force supplying means moving said second member relative to said first member to bias said second piston-like member toward said wall of said housing when the fluid compressor becomes inoperable thereby opening said first relief port, said second member including abutment means contacting said wall to maintain said passage means in an open state when said first relief port is opened to relatively quickly equalize pressure across said control.

3,967,645

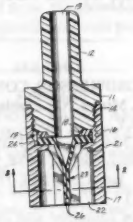
CHECK VALVE FOR URINE COLLECTION DEVICE

Roy Gregory, Sierra Madre, Calif., assignor to Urocare Products, Inc., El Monte, Calif.

Continuation-in-part of Ser. No. 436,442, Jan. 25, 1974, abandoned. This application Jan. 3, 1975, Ser. No. 538,460

Int. Cl.² F16K *15/14*

U.S. Cl. 137—525.1 **14 Claims**



1. A liquid check valve having no back leakage and capable of draining substantially dry in the forward direction comprising:

a rigid body having a passage therethrough;

an elastomeric sealing member mounted within the body, said sealing comprising:

a pair of flat, parallel, normally spaced apart, sealing leaves;

a web among each lateral edge of the sealing leaves and integral therewith for joining the adjacent edges of the leaves together, said leaves and webs collectively defining a flat tube having a flat, normally open, passage therethrough; and

a peripheral end flange integral with the leaves for mounting the sealing member in the body; and

means for pressing on the lateral edges of the leaves for forcing the lateral edges of the flat passage closed, comprising spaced apart wall portions extending longitudinally in the rigid body for receiving the lateral edges of the sealing leaves, said wall portions being spaced apart no more than the thickness of the elastomer portion of the sealing member therebetween.

3,967,646

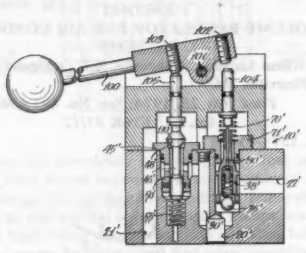
THREE-WAY CONTROL VALVE

James C. Solie, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Division of Ser. No. 469,424, May 13, 1974, Pat. No. 3,934,610. This application Aug. 15, 1975, Ser. No. 605,032

Int. Cl.² F15B *13/04, 13/14*

U.S. Cl. 137—596.12 **4 Claims**



1. A three-way control valve for use with a single-acting cylinder or the like in control of advance, return or hold operation thereof comprising, a valve body having an inlet port, a control port and a tank port, a first bore in said body in communication with all three of said ports, a first poppet check valve in said first bore and having a valve seat whereby, when seated, flow from the control port to the inlet port is blocked, a second poppet check valve in said first bore and having a valve seat whereby, when seated, flow from the control port to the tank port is blocked, a second bore in said body in parallel adjacent relation to said first bore and in communication with said inlet port and the tank port, a spool valve in said second bore with spaced opposed lands and one of said lands defining a poppet valve member coacting with a valve seat to control flow to the tank port, a passage connecting said first bore with said second bore intermediate said spaced opposed lands of said valve spool for fluid flow from the inlet port to the tank port, the poppet valve member in said second bore having an open position to permit flow from the inlet port to the tank port in hold and return operations and to block said flow in an advance operation whereby fluid flows past said first check valve to said control port, means for positioning said poppet valve member, both of said check valves being held on their respective valve seats by fluid pressure in a hold operation, means for opening said second check valve and holding said first check valve closed in a return operation to permit fluid flow from the control port to the tank port, and decompression valve means operable to bleed fluid from the control port to the tank port to reduce said fluid pressure and reduce the force required to open said second

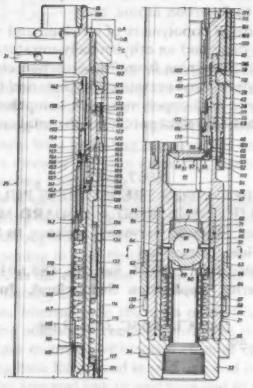
check valve, said decompression valve means including a relatively small poppet valve carried by said second check valve, spring means acting between said first check valve and said small poppet valve, a movable pin for opening said small poppet valve, and a movable member for sequentially engaging said pin and said second check valve, said spaced opposed lands of said spool valve being of unequal area with the land defining said poppet valve member being of a greater area to render said valve member pressure-sensitive as moved toward said valve seat for the poppet valve member to initiate said advance operation.

3,967,647

SUBSEA CONTROL VALVE APPARATUS

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,829
Int. Cl.² E21B *43/12, 33/00*
U.S. Cl. 137—614.11 **21 Claims**



10. Apparatus adapted to be positioned in a subsea blowout preventer stack or the like for controlling the flow of fluid from an offshore well, comprising: a valve body having a flow passage; a mounting sleeve movable upwardly and downwardly within said flow passage and with respect to said valve body between upper and lower position; first and second valve assemblies carried by said mounting sleeve, one of said valve assemblies including a ball valve element rotatable between open and closed positions with respect to said flow passage; means on said valve body for rotating said ball element to open position in response to downward movement of said mounting sleeve and for rotating said ball element to closed position in response to upward movement of said mounting sleeve; and means for urging said mounting sleeve toward said upper position where said ball valve element is closed.

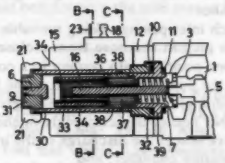
3,967,648

HYDRAULIC VALVES DIRECTLY CONTROLLED BY EITHER DIRECTOR ALTERNATING CURRENT

Paolo Tirelli, Cinisello Balsamo (Milan), Italy, assignor to Atos Oleodinamica S.p.A., Milan, Italy

Filed May 9, 1974, Ser. No. 468,264
Claims priority, application Italy, Jan. 2, 1974, 19002/74
Int. Cl.² F16K *31/06*
U.S. Cl. 137—625.65 **22 Claims**

1. A hydraulic valve actuated directly by at least one electromagnetic apparatus and comprising a valve body having a plurality of channels for the flow of hydraulic fluid, at least one of said channels being normall filled with the fluid; a slider which axially slides within said valve body and controls the outflow of hydraulic fluid; springs arranged axially with said slider and acting thereon; at least one round magnetic counter-armature disposed coaxial with said slider, said counter-armature having a radially outwardly extended flange which rests against said valve body, a coaxial round cavity facing said slider and having a coaxial bore; a tubular member coaxial with said counter-armature and surrounding said counter-armature, said tubular member having selected magnetic properties and having at one of its ends a portion extending radially outwardly an at the other of its ends a thick wall plug; a prismatic movable magnetic armature slidable in said tubular member; a rod-like pusher passing through said bore of said counter-armature and connecting said movable armature with said slider; a manual pusher slidably mounted in an axial bore of said thick wall plug coaxial with and protruding inwardly of said tubular member; an electric coil mounted on said tubular member in coaxial relationship; a magnetic tube



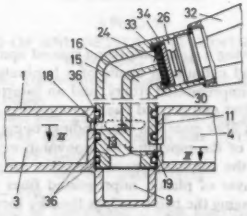
portion surrounding said coil in coaxial and radially spaced relationship with said coil, said magnetic tube portion being axially slotted; at least two superposed magnetic metal disk packs disposed coaxial with said tubular member and extending radially at both ends of said magnetic tube portion between said magnetic tube portion and said tubular member; a molded plastic casing enclosing said magnetic tube portion, said superposed magnetic metal disk packs and said coil; means for connecting said electric coil to an electric source; means for fastening said tubular member and said counter-armature to said valve body; means for fastening said molded plastic casing to said tubular member; sealing means for preventing oozing of hydraulic fluid between said valve body, said counter-armature and said tubular member; and sealing means for preventing oozing of hydraulic fluid between said thick wall plug and said manual pusher.

3,967,649

MIXING VALVE ASSEMBLY

Robert Amblank, Beinwil, Switzerland, assignor to Aktiengesellschaft Oederlin & Cie, Baden, Switzerland

Filed Feb. 10, 1975, Ser. No. 548,574
Claims priority, application Switzerland, Feb. 21, 1974, 2405/74; Dec. 30, 1974, 17363/74
Int. Cl.² F16K *11/18*
U.S. Cl. 137—636.3 **8 Claims**



1. A mixing valve assembly comprising

A. a body portion having

1. a cylindrical bore extending therethrough,

2. a pair of entrance channels for the admission of two dissimilar fluids,
3. a discharge spout,
   a. said channels communicating with said bore through separate openings in the wall of said bore,
   b. said openings being axially spaced,

B. a mixing control member including

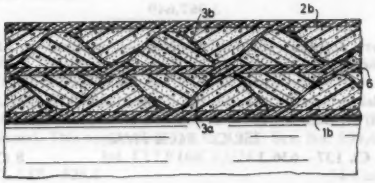
1. a cylindrical plug mounted and rotatable in said bore,
   a. and a fluid tight circumferential seal disposed between said plug and the wall of the bore intermediate the axially spaced openings therein,
2. said control member having therein
   a. a mixing chamber,
   b. two separate inlet passages discharging into the mixing chamber, and
   c. an outlet passage extending entirely through said mixing control member and discharging from the mixing chamber to said discharge spout in side-by-side relation with said inlet passages from the mixing chamber.
      i. each inlet passage being movable with rotation of the plug in the bore from a closed position to an open position with respect to a corresponding one of the openings in the wall of the bore, one of said openings becoming increasingly closed as the other becomes increasingly opened,
   d. a valve seat at the discharge of the inlet passages into the mixing chamber, and
   e. a valve engageable with said seat, whereby rotation of the plug in the bore regulates the relative amounts of fluids flowing from the entrance channels to the mixing chamber, and movement of the valve from and toward its seat regulates the total volume of flow discharged through the outlet passage.

3,967,650

PIPES

Kjell S. Borge, Stokke, Norway, assignor to Vera Fabrikker A/S, Sandefjord, Norway

Filed Nov. 29, 1973, Ser. No. 420,094
Claims priority, application Norway, Dec. 5, 1972, 4460/72
Int. Cl.² F16L *9/06, 9/16*
U.S. Cl. 138—144 **3 Claims**



1. A pipe having a wall comprising spaced apart concentric first and second cylindrical shells of a laminate of helically wound plastic-impregnated fibers, and an intermediate layer between said first and second shells comprising two helically wound strips of filler material, the windings being spaced apart along the axis of the pipe and the convolutions of one strip lying between the convolutions of the other strip; and a helically wound layer of plastic impregnated fiber disposed between and engaging the two windings thereby forming a corrugated layer having helical corrugations, said layer being anchored to the innermost shell along a path corresponding to one of the filler strip windings and anchored to the outermost shell along a path corresponding to the other filler strip winding.

3,967,651

ADHESIVES COATINGS AND LAMINATES UTILIZING ETHYLENE COPOLYMERS AND COAL-TAR PITCH

George F. Snyder, Franklin Township, Westmoreland County, and Robert M. Stewart, Monroeville Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 201,861, Nov. 24, 1971, Pat. No. 3,814,712, which is a continuation-in-part of Ser. No. 692,295, Dec. 21, 1967, abandoned. This application Jan. 30, 1974, Ser. No. 438,141
Int. Cl.² F16L *9/14*
U.S. Cl. 138—145 **4 Claims**

1. A coated culvert pipe comprising a steel substrate bonded to a 10 – 30 mil thick protective film of a composition comprising:
   a. from about 10 to about 75 weight percent coal-tar pitch;
   b. from about 25 to about 90 weight percent of a polymeric ethylene composition selected from the group consisting of
      1. a terpolymer of ethylene, vinyl acetate, and an ethylenically-unsaturated carboxylic acid containing from 3 to 8 carbon atoms, and
      2. a mixture of copolymers of ethylene and vinyl acetate and ethylene and an ethylenically-unsaturated carboxylic acid containing from 3 to 8 carbon atoms wherein the ethylene-vinyl acetate copolymer and the ethylene-carboxylic acid copolymer each comprise from about 5 to about 85 weight percent of the total composition.

3,967,652

SPRING HOOK FOR THE HARNESS PULL OF A DOUBLE-LIFT OPEN-SHED JACQUARD MACHINE

Wolfgang Seiler, Rheydt, Germany, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Filed July 3, 1974, Ser. No. 485,601
Claims priority, application Switzerland, July 6, 1973, 9917/73
Int. Cl.² D03C *3/00, 3/08*
U.S. Cl. 139—59 **9 Claims**

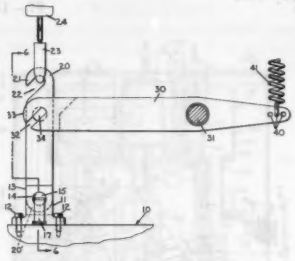
1. A single-shank, resiliently flexible, hook for use in a double-lift, open-shed Jacquard machine, said hook having a body part with two vertically spaced connecting noses and a support nose mounted thereon, said support nose being arranged on the hook below said two connecting noses and a spring portion extending away from said support nose in the form of a resilient extension which is bent backward at 180° relative to said body part, comprising the improvement wherein said body part of said hook has a first zone (I) between said two connecting noses, a second zone (II) located between the lower one of said two connecting noses and said support nose and an immediate third zone between said lower one of said two connecting noses and said second zone (II), said body part in said third zone being more resilient than is said body part in said second zone (II).

3,967,653

HARNESS SUPPORT AND LINKAGE

Merton C. Lyman, Jr., Woodstock, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 23, 1975, Ser. No. 589,440
Int. Cl.² D03C 13/00
U.S. Cl. 139—88 6 Claims



1. An improved support for harness frames on a loom in which the harnesses controlling the warp yarns are actuated by a loom dobby, said support comprising:

a. a mounting base secured to the upper rail of the harness frame, said base including an upwardly extending flange having a circular opening extending therethrough.

b. a connecting link having

i. means at one end to mate with the said flange of said mounting base and having a circular opening extending therethrough which can be brought into registry with the opening in said flange,

ii. means at the other end for connecting said link to the loom dobby; and,

iii. means intermediate the ends of said link defining an opening adapted to receive a rotatable connecting pin.

c. a pivot pin mounted within said circular openings in said mounting base flange and in said one end of said connecting link to join said link to said base and to provide a pivot axis for said link.

d. means mounted on the loom to provide a pivot axis extending in a direction substantially parallel to the warp yarn.

e. a harness return bar mounted intermediate its inner and outer ends on said pivot axis means so that its inner end overlaps said connecting link, said return bar including:

i. means at its inner end defining an opening that is in registry with said opening intermediate the ends of said link.

f. a pivot pin connecting said link with said harness return bar, and

g. biasing means attached to the outer end of said harness return bar and to the loom for continuously urging said outer end in an upward direction.

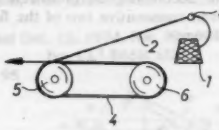
3,967,654

YARN FEED MECHANISM FOR A WEAVING MACHINE

Jakob Müller, Zwidellen, Switzerland, assignor to Jakob Muller, Forschungs-und Finanz AG, Frick, Switzerland

Filed Oct. 30, 1974, Ser. No. 519,109
Claims priority, application Switzerland, Nov. 27, 1973, 16646/73
Int. Cl.² D03D 47/34
U.S. Cl. 139—452 1 Claim

1. A yarn transport mechanism for a needle band weaving machine, said yarn transport mechanism comprising a pair of spaced rollers, a single endless transport belt entrained over said rollers, said belt having an inner surface engaging said rollers and an outer surface for engagement by yarn to be transported, said belt outer surface having a friction coating for facilitating the gripping or yarn, and drive means for at least one of said rollers, said drive means being of the infinitely variable speed type and being the sole means for driving said belt, said belt at all times having a portion thereof engaging one of said rollers to an extent to substantially reverse the direction of movement of said belt, and said yarn extends substantially entirely around said belt portion with the direction of movement of said yarn being at least substantially reversed, and said belt forming the sole means for driving said yarn.

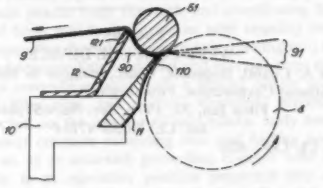


3,967,655

APPARATUS FOR STABILIZING THE FABRIC WITHIN THE WEFT BEAT-UP AREA IN WAVE WEAVING LOOMS

Dalibor Sejbal; Josef Holub; Zbyněk Mikš, and Vítězslav Vasek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 1, 1973, Ser. No. 366,127
Claims priority, application Czechoslovakia, June 12, 1972, 4051-72
Int. Cl.² D03D 49/00; D03J 1/22; D03D 47/26
U.S. Cl. 139—291 R 3 Claims



1. An apparatus for stabilizing the fabric within the weft beat-up area in a travelling-wave shedding loom, wherein the beat-up is effected by means of a rotary reed, the improvement which comprises means forming a stabilization slot, and a deflection rail downstream of said means, the top portion of said deflection rail lying above the level of the weaving plane, the means for forming the stabilization slot comprising delimitation rail having a top edge and fixed on a through bar along the weaving plane, and a lower rail.

3,967,656

METHOD OF AND DEVICE FOR CONTROLLING A WEAVING LOOM

Miyuki Gotoh, Tokorozawa, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Feb. 25, 1975, Ser. No. 553,032
Claims priority, application Japan, Mar. 7, 1974, 49-26622; May 20, 1974, 49-56408
Int. Cl.² D03D 51/38
U.S. Cl. 139—370.2 13 Claims

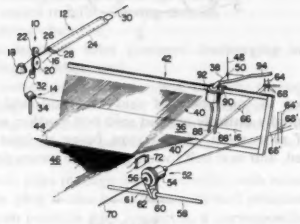
1. A method of controlling a weft inserting motion of a weaving loom for stopping the loom in response to failure in the weft inserting motion, comprising the steps of:

monitoring the operation of the loom and producing a train of first signals at time intervals each representative of a predetermined length of a fabric produced;

monitoring picks of a weft yarn shot into a shed of warp yarns and producing a second signal responsive to a pick of the weft yarn improperly shot into the shed;

storing the second signals produced;

producing a control signal responsive to a predetermined number of the second signals produced within a time interval between consecutive two of the first signals for stopping the loom;



clearing the stored second signals if the stored second signals are short of said predetermined number at the end of said time interval; and

developing and storing a predetermined number of third signals prior to re-starting of the loom, said predetermined number of the third signals being smaller by at least one than said predetermined number of said second signals, thereby to produce said control signal in response to the second signal firstly produced in a subsequent operation of the loom which is re-started.

3,967,657

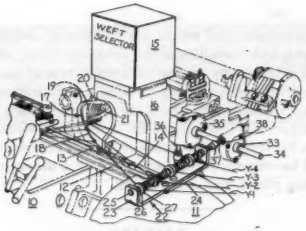
WEFT CONTROL DEVICE

John A. Cugini, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1976, Ser. No. 651,444

Int. Cl.² D03D 47/34

U.S. Cl. 139—450 **4 Claims**



1. A weft control device for looms of the shuttleless type wherein weft from a stationary source is presented to an inserting member and inserted into sheds of warp threads, said device comprising:

a. a support means fixed on the loom;

b. means defining a pair of disc elements rotatably mounted in said support means to receive the weft therebetween;

c. biasing means for continually urging at least one of said disc elements into yielding contact with the other and the weft associated therewith; and

d. drive means for rotating said disc elements in a direction to apply tension to the weft in the area intermediate said disc elements and the edge of the fabric being formed.

3,967,658

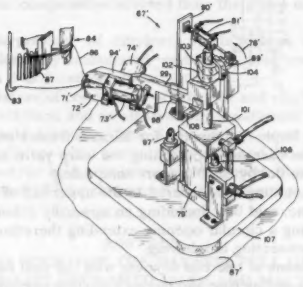
APPARATUS AND METHOD FOR USE IN WINDING COILS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 5, 1975, Ser. No. 555,370

Int. Cl.² B21F 3/00

U.S. Cl. 140—92.1 **26 Claims**

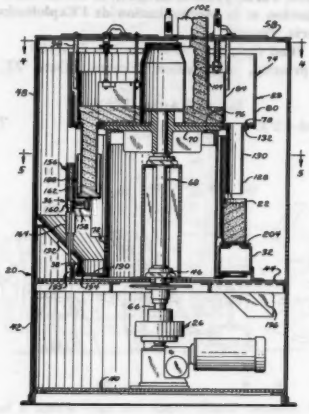


1. A method of developing at least first and second wound coils, and establishing and maintaining a slack intercoil wire segment that extends between and interconnects first and second spaced apart coils in a winding receiver, said method comprising: initiating operation of a winding mechanism assembly that includes at least one magnet wire dispensing means, at least one winding turn size determining means, at least one winding turn receiver that is movable about a longitudinal axis, and at least one wire clamp; relatively moving the at least one winding turn size determining means and the at least one magnet wire dispensing means and generating a plurality of winding turns for the first coil while retaining the at least one wire clamp in a first position remote from the at least one wire dispensing means; moving the at least one clamp to a second position adjacent to a winding plane while generating a final turn of the first coil, then moving at least a portion of the at least one clamp to an intercept position for intercepting a final wire segment of the first coil, and intercepting a final wire segment of the first coil with the at least a portion of the at least one clamp; clamping the intercepted final wire segment with the at least a portion of the at least one clamp; moving the at least a portion of the at least one clamp and the clamped wire segment from the intercept position to a final hold position adjacent the winding plane substantially concurrently with movement of the at least one winding turn receiver about the longitudinal axis while the first coil is retained therein; generating turns of wire for a second coil by relatively moving the at least one winding turn size determining means and the at least one wire dispensing means while continuing to hold the clamped wire segment in the final hold position; releasing the clamped wire segment; and returning the at least one clamp to the first position remote from the at least one wire dispensing means; the substantially concurrent movement of the at least one winding turn receiver and clamped wire segment maintaining a slack intercoil wire segment between the first coil and the at least one wire clamp.

3,967,659
CONTAINER FILLING APPARATUS

Graeme W. Warner, Hinsdale; Victor M. Svagdis, Palos Park; James W. Petrzelka, Cicero, and John C. Nalbach, La-Grange Park, all of Ill., assignors to John R. Nalbach Engineering Company, Inc., Chicago, Ill.

Filed May 16, 1975, Ser. No. 578,278
Int. Cl.² B65B 1/22
U.S. Cl. 141—79 20 Claims

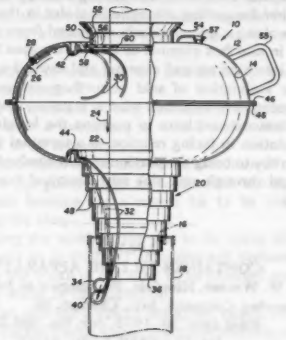


1. An apparatus for filling like containers with a like measured amount of divided matter including; a housing; a drive connected to said housing; a filling turret in said housing having a rotatable portion connected to said drive and said portion being rotated by said drive at a prescribed rate, said filling turret including a filling tank having a rotatable base connected to said drive and said rotatable base rotated with said portion of the filling turret, a plurality of measuring flasks arranged in a circle concentric with the circle of rotation of said portion of the filling turret connected to said rotatable base of the filling tank for receiving divided matter therefrom and measuring the amount of said matter, said plurality of measuring flasks moving in a circular path having a center concentric with the center of the circle of the plurality of measuring flasks, and a container pocket positioned adjacent to each of the measuring flasks and moving therewith for carrying a container; an input conveyor positioned adjacent to the housing for delivering empty containers to the filling turret, said input conveyor moving in a straight-line path toward the filling turret intersecting the circular path of the container pockets at a point where the velocity of a container pocket at that point includes a vector at substantially a right angle to the direction of movement of a container on the input conveyor, said input conveyor urges the empty containers into the respective container pockets; a container elevator in said housing positioned adjacent to the point where the straight-line path of the input conveyor intersects the circular path of the container pockets for raising empty containers in the respective container pockets into a telescoping relationship with the respective measuring flasks; an arcuate container support in said housing positioned below a portion of the measuring flasks for holding the containers in telescoping relationship with the measuring flasks and then allowing the containers to move downward relative to the measuring flasks through a given portion of the circular path of the measuring flasks; and an output conveyor positioned adjacent to the container pocket path for receiving filled containers from the container pockets and carrying the filled containers away from the filling turret, said output conveyor having a straight-line path moving away from the filling turret and being substantially tangential to the circular path of the measuring flasks at the point of contact of the straight-line path and the circular path.

3,967,660
FUEL OVERFLOW CONTROL DEVICE FOR BOATS

James E. Russell, One Tom's Point Lane, Port Washington, N.Y. 11050

Filed Oct. 15, 1974, Ser. No. 514,471
Int. Cl.² B65B 3/26
U.S. Cl. 141—95 5 Claims

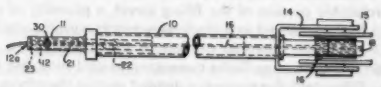


1. A fuel overflow control device for use with a fueling nozzle and a filler pipe communicating with a boat fuel tank comprising a see-through plastic body bounding an overflow chamber having an operative position projected into said filler pipe so as to visually signal termination of the fueling procedure when said plastic body fills with fuel overflowing from said boat fuel tank, said body having an inlet opening thereinto and a depending funnel having an exit opening into said filler pipe, and intermediate said inlet and exit openings there being defined centrally of said body a fueling nozzle access path to said filler pipe, and a static electricity grounding means supported on the interior of said plastic body having upper and lower contacts extending into said fueling nozzle access path so as to establish grounding contact with said fueling nozzle in its operative position projected into said plastic body and along said access path thereof, said lower contact being constructed of a springy metal formed in a bowed configuration with a depending movable contact end, whereby in response to the flattening of said lower contact by said inwardly projected fueling nozzle said contact end thereon is urged into grounding contact with said filler pipe.

3,967,661
INSULATION SLITTING AND WIRE WRAPPING TOOL

Ray R. Scoville, La Canada, and Harold F. Tipton, Burbank, both of Calif., assignors to Vector Electronic Company, Sylmar, Calif.

Filed Sept. 17, 1975, Ser. No. 614,098
Int. Cl.² B21F 15/00; B25F 1/00; H02G 1/12
U.S. Cl. 140—124 19 Claims



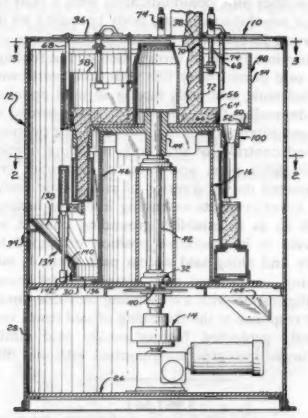
1. A wire wrap tool for wrapping insulated conductor wire on a terminal, comprising an elongated tubular member having a tip end which defines a central axial bore for the reception of a terminal to be wrapped, said central bore opening into an outermost face of said tip end which face is disposed

nonorthogonal to the axis of said tubular member, a supply of insulated conductor wire mounted on said tubular member in longitudinally spaced relation to said tip end of said member, an elongated first interior channel within said tubular member extending in a direction generally parallel to and radially displaced from the axis of said tubular member for guiding a length of said insulated conductor wire from said supply to said tip end of said member, a second comparativey short interior channel extending at an angle to the axis of said member from said first channel to said outermost face of said tip end at a position on said face radially spaced from the opening of said central axial bore, and slitting means within said tubular member for cutting a longitudinal slot in the insulation of said wire along a line angularly displaced from the bottom of the wire in said first channel as said wire passes from said first channel into said second channel and toward said outermost face, the inclination of said nonorthogonal outermost face being operative to twist said wire as it passes from said second channel toward said bore to position the longitudinal slot in said insulation in facing relation to a terminal in said central bore thereby to bring the portion of said conductor wire which is exposed through said slot into electrical contact with the terminal.

3,967,662
CONTAINER FILLING APPARATUS

Graeme W. Warner, Hinsdale, Ill., assignor to John R. Nalbach Engineering Company, Inc., Chicago, Ill.

Filed June 20, 1975, Ser. No. 588,824
Int. Cl.² B65B *43/50, 43/58*
U.S. Cl. 141—148 **9 Claims**

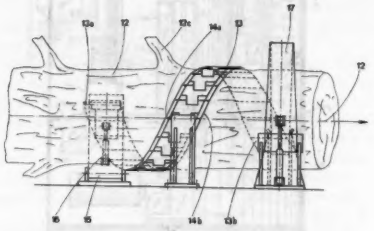


1. An apparatus for filling like containers with a like measured amount of divided matter, including; a housing; a drive connected to said housing; a filling turret in said housing having a rotatable portion connected to said drive, said rotatable portion being rotated by said drive at a prescribed rate, said filling turret including a filling tank having a rotatable floor connected to said drive, said rotatable floor rotated with said rotatable portion of the filling turret, a plurality of measuring flasks arranged in a circle concentric with the circle of rotation of said rotatable portion of the filling turret, said plurality of measuring flasks connected to said rotatable floor of the filling tank for receiving divided matter therefrom and measuring the amount of said matter, said plurality of measuring flasks moving in a circular path having a center concentric with the center of the circle of the plurality of measuring flasks, each of said measuring flasks having an open tapered mouth adjacent to the filling tank and a cylindrical body connected to the mouth, said tapered mouth having its wider end adjacent to the filling tank, and a container pocket positioned adjacent to each of the measuring flasks and moving therewith for carrying a container; and an arcuate container support mounted in said housing positioned below a portion of the measuring flasks for holding the containers in telescoping relationship with the measuring flasks.

3,967,663
STRIPING DEVICE

Jean Loigerot, Paris, France, assignor to Association pour la Rationalisation et la Mechanisation de l'Exploitation Forestiere, Paris, France

Filed Oct. 21, 1974, Ser. No. 516,180
Claims priority, application France, Oct. 22, 1973, 73.37631
Int. Cl.² A01G *23/08*
U.S. Cl. 144—2 Z **7 Claims**



1. A device for stripping the limbs from a tree trunk comprising:
a frame;
means for effecting advancement of a tree along its longitudinal axis with respect to said frame;
an elongate cutting chain having two ends and being formed from a plurality of articulated links pivotally connected to each other, one end of said cutting chain being connected to said frame, said chain being constructed and arranged so that its opposite end is spaced longitudinally from said first mentioned end of said chain to enable said chain to be wrapped about said trunk in a continuous, helical configuration;
a lever arm mounted to the frame and having a free end connected to said opposite end of the cutting chain, the lever arm being mounted for movement between positions in which it wraps and unwraps the chain helically about the trunk;
the length of the chain being such as to enable it to be wrapped about the trunk more than 360°.

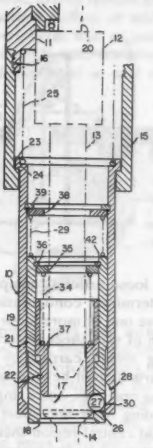
3,967,664
POWER DRIVEN SCREW DRIVER WITH A SCREW HOLDING NOSEPIECE

Richard S. Lesner, and Murdo A. MacDonald, both of Bloomfield Hills, Mich., assignors to Chicago Pneumatic Tool Company, New York, N.Y., a part interest

Filed Feb. 14, 1975, Ser. No. 550,150
Int. Cl.² B25B *23/00*
U.S. Cl. 144—32 R **38 Claims**

1. A screw holding nosepiece for a screw driving tool having a screw driving bit, comprising inner and outer sleeve members having an axial slidable relation to one another, the inner sleeve having a normal position projecting axially out of a front end of the outer sleeve under the bias of a spring load, a coupling for supporting the sleeves to the housing of the tool for relative axial movement in coaxial relation to the driving bit of the tool, releasable blocking means carried by the inner sleeve normally blocking entry of the head of a screw into the inner sleeve, said inner sleeve being retractible into said outer

sleeve against the bias of the spring load in response to axial force against said blocking means of a screw head seeking entry into said inner sleeve, means carried by the outer sleeve having response to a predetermined extent of said relative retraction of the inner sleeve to effect release of the blocking means from its blocking condition so as to allow entry of the



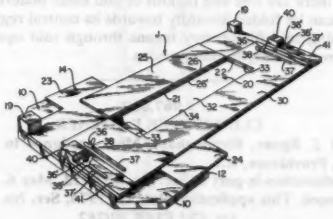
head of a screw into the inner sleeve beyond the blocking means, and the spring load having response to said predetermined retracted relation of the inner sleeve to return the inner sleeve and the blocking means to their normal position so as to block the head of a screw previously entered into the inner sleeve beyond the blocking means from escaping in the opposite direction out of the inner sleeve.

3,967,665

ADJUSTABLE ROUTING TEMPLATE

Allan M. Lund, 515 E. Adams, Riverton, Wyo. 82501

Filed Oct. 2, 1974, Ser. No. 511,446
Int. Cl.² B27G *23/00*
U.S. Cl. 144—144.5 R **6 Claims**



1. In apparatus for routing elongated slots in a workpiece in which a router bit is adapted to be inserted through a guide bushing, the combination comprising:

a stationary frame including a workpiece-receiving area and a stationary guide in overlying relation to the workpiece-receiving area in which the guide edge extends in a direction parallel to the intended length of the slot to be formed;

adjustable template means mounted on said stationary frame including a second adjustable guide edge disposed in coplanar spaced parallel relation to said stationary guide edge, said stationary and adjustable guide edges defining guide opening means therebetween in overlying relation to the workpiece for guiding the router guide bushing along the guide edges to form a slot or predetermined width in the workpiece; and

adjustment means between said adjustable template and said stationary frame to position said adjustable guide edge with respect to said stationary guide edge at a spacing corresponding to the intended width of the slot to be formed in the workpiece plus the diameter of said guide bushing less the diameter of said router bit, said adjusting means including adjustable sizing means between said adjustable template means and said frame movable a first distance independently of said adjustable template means and being further movable a second distance in the same direction as the direction of movement for the first distance to cause movement of said adjustable template means over a distance corresponding to the second distance

6. The method of routing a slot in a shelf unit and the like, comprising the steps of:

a. placing a template having an adjustable guide opening therein over a workpiece in which a slot of the desired width is to be formed;

b. setting the width of the slot in one direction of movement between the guide edges to conform to the diameter of the guide bushing for a router bit to be employed in forming the slot;

c. increasing the width of the slot in the same direction of movement as in step (b) an additional distance to conform to the width of the shelf to be inserted into the slot less the width of the router bit;

d. fixing the spacing between the guide edges; and

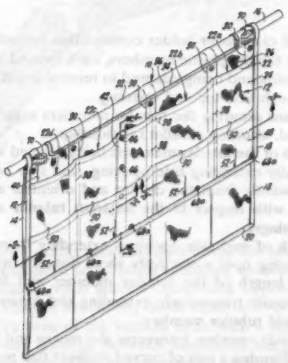
e. advancing the router within the guide bushing along each guide edge with the router bit extending through the opening formed therebetween to form a resultant slot of the desired width in the workpiece.

3,967,666

BEDSIDE ARTICLE BAG

Sophia M. Farrar, 771 Douglas Drive, San Leandro, Calif. 94577

Filed Feb. 21, 1975, Ser. No. 551,824
Int. Cl.² B65D *33/14*
U.S. Cl. 150—1 **7 Claims**



1. An article bag for attachment to a bed rail comprising a first cloth flap and a second cloth flap said flaps having a common top portion adapted to be supported in saddle fashion over a rail with said flaps depending from each side of the rail, first fastening means having first and second cooperating fastening elements on said first and second flaps adjacent said top portion for fastening said article bag together under the rail, second fastening elements on said first and second flaps displaced from said top portion for fastening said first flap to said second flap, a plurality of first pockets on said first flap

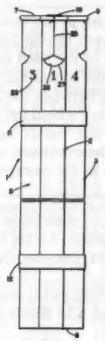
and a plurality of second pockets on said second flap; wherein said first and second flaps and said common top portion are formed of a continuous backing panel, and at least one first overlay panel across the backing panel having sides and a bottom attached to said backing panel on said first flap and at least one second overlay panel across the backing panel having sides and a bottom attached to said backing panel on said second flap, said overlay panels and backing panel having means for dividing said backing panel and said overlay panels into said plurality of pockets, said means for dividing said overlay panels into said plurality of pockets comprising a series of parallel pleats in said backing panel running the length of said panel from said first flap to said second flap, and a series of stitchings interconnecting said overlay panels with said backing panel along said pleats.

3,967,667

GOLF CLUB COVER-HOLDER CONSTRUCTION

Joseph J. Robinson, 1224 E. Front St., Dover, Ohio 44622

Filed June 23, 1975, Ser. No. 589,445
Int. Cl.² A63B *55/00*
U.S. Cl. 150—1.5 R **8 Claims**



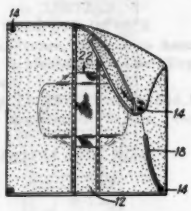
1. Golf club cover-holder construction including:
a. four tubular plastic members, each formed with a top end opening and being adapted to receive a golf club inserted through said top end opening;
b. means securing the tubular members together in a clustered, abutting parallel relationship;
c. each of the tubular members being formed with a longitudinally extending side opening, said side opening facing outwardly from the cluster and oriented approximately 90° with respect to the adjacent tubular members side openings;
d. each of said side openings extending from the top end opening over a relatively short distance with respect to the length of the tubular member and terminating in generally transversely extending slot means also formed in said tubular member;
e. the side opening, transverse slot means and top end opening forming a pair of curved resilient flap means, said flap means extending generally between the top end opening and transverse slot means on each tubular member, and are formed as an integral part of said tubular member;
f. the flap means being biased toward a closed position due to the resiliency of the tubular plastic members; and
g. said flap means being adapted to extend along and conform to portions of a golf club head to retain the club within the tubular member and to protect the club head from contacting adjacent club heads when a golf club is inserted through the top end opening of the tubular member.

3,967,668

CARRIER FOR LOOSE ARTICLES

Jack D. Franco, c/o Franco Mfg. Co., 309 5th Ave., New York, N.Y. 10001

Filed Dec. 5, 1974, Ser. No. 529,949
Int. Cl.² B65D *65/10*
U.S. Cl. 150—52 R **5 Claims**



5. A carrier for loose articles, comprising sheet material means of a predetermined configuration capable of being spread out to receive one or more loose articles at a substantially central region of said sheet material means, a plurality of opening-forming means carried by said sheet material means at spaced parts thereof beyond said central region and respectively defining openings, and a single filamentary means fixed to and extending from said sheet material means at a location beyond said central region thereof and spaced from said plurality of opening-forming means, whereby said single filamentary means can be passed through said openings of said plurality of opening-forming means to gather them together for forming from said sheet material means a pouch-like enclosure capable of hanging down from the gathered plurality of opening-forming means with one or more articles therein while filamentary means facilitates carrying the enclosure, said sheet material means having an elongated substantially rectangular configuration and said plurality of opening-forming means including one pair of opening-forming means carried by said sheet material means inwardly of one end thereof and adjacent opposed side edges thereof while a third opening-forming means and said filamentary means are carried by said sheet material means inwardly of an opposed end thereof and respectively adjacent said opposed side edges thereof, whereby beyond said pair of opening forming means and beyond said third opening-forming means and said filamentary means there are free end regions of said sheet material means which can be folded inwardly towards its central region prior to passing said filamentary means through said openings of said three opening-forming means.

3,967,669

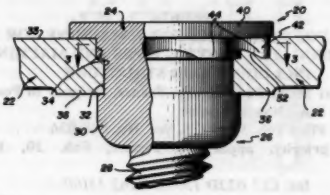
CLINCH TYPE FASTENER

Ronald J. Egner, Birmingham, Mich., assignor to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 467,213, May 6, 1974, abandoned. This application Oct. 29, 1974, Ser. No. 518,522
Int. Cl.² F16B *39/282*
U.S. Cl. 151—41.73 **13 Claims**

1. A self-clinching fastener of the type for connection to a section of sheet material, or the like, having an aperture formed therein, said fastener including a head and a shank portion, with a groove formed in said shank, with said head being embeddable in said sheet material to displace material into said groove to form a mechanical interlock between said material and said fastener, said shank including a tapered extruding portion having a surface converging in a direction away from said head, said surface merging with a cylindrical surface which provides a smooth, cylindrical, relatively elongate, continuous periphery for said extruding portion and which also defines the maximum diameter thereof, said maximum diameter selected to be greater than the diamter of said

aperture whereby upon engagement of said extruding portion with said sheet material, said aperture will be resized to approximately said maximum diameter, said groove in said shank being disposed adjacent said head, and intermediate said head and said extruding portion, with the outer radial dimension of said groove, axially remote from said head being defined by said cylindrical surface of said extruding portion whereby the inner peripheral wall of said resized aperture, subsequent to engagement by said extruding portion, but prior to the embedding of said head in said sheet material, will



closely overlie said groove, said head including a plurality of radially disposed projections, said projections being sized such that the volume thereof is approximately equal to the volume of said groove, whereby the volume of the material displaced upon embedding of said head in said sheet material is equal to or greater than the volume of said groove, whereby, due to the close overlying of said inner periphery of said aperture with said groove, it is assured that the material displaced will completely fill said groove upon the embedding of said head in said sheet material.

3,967,670

TIRES

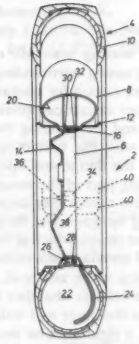
Alan J. Brickwood, Loughborough, England, assignor to Molehurst Limited, Leicester, England

Filed Apr. 3, 1975, Ser. No. 564,676

Claims priority, application United Kingdom, Aug. 20, 1974, 36491/74

Int. Cl.² B60C 5/06

U.S. Cl. 152—337 **7 Claims**



1. Multi-compartment tire comprising:

A. a plurality of compartments arranged in succession around the periphery of the tire;

B. a first annularly extending passage, and first one-way valve means located between the first passage and each of said compartments and adapted to block flow of air from each of said compartments to the first passage;

C. a second annularly extending passage, and second one-way valve means located between the second passage and each of said compartments and adapted to block flow of air from the second passage to each of said compartments;

D. a main valve housing connected to the first passage and to the second passage, an external port for supplying air to or venting air from the housing, a valve chamber in the main valve housing continuous with the external port, a first internal port continuous with the valve chamber and connected to the first passage, a second internal port continuous with the valve chamber and connected to the second passage; and

E. a first valve member located at least in part in the chamber movable into a first position in which the external port is open and the internal ports are in direct intercommunication and biassed to a second position in which the external port is closed and in which the first valve member separates the internal ports to restrict communication between them.

3,967,671

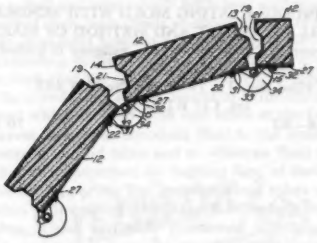
UPWARDLY-ACTING SECTIONAL DOOR

Ralph W. Stanley, 30 Sutherland Road, North Attleboro, Mass. 02760; Norman G. Compton, 856A Oakridge Ave., North Attleboro, Mass. 02760, and Lionel J. Bibeault, Eaton St., Cumberland, R.I. 02864

Filed Jan. 6, 1975, Ser. No. 538,598

Int. Cl.² E06B 3/16, 3/48

U.S. Cl. 160—232 **4 Claims**



1. An upwardly-acting sectional door or the like comprising a plurality of elongated horizontally extending sections in edge to edge adjacency, each section comprising opposite sheet material face skins of a relatively dense material over substantially the entire area of the section faces with a filling of a relatively porous material between said skins, edge closure means between said skins at the edge of each section, the closure means being formed to define a tongue at one edge and a mating groove at the other, continuous reinforcing means adjacent the opposite longitudinal edges of at least one of said skins and in contact with the skin over a substantial width thereof, said closure means and reinforcing means being of the same piece of material and hinge means contacting the face of the skin at opposite edges of said section at the location of said reinforcing means for hingedly connecting the longitudinal edge portions of adjacent sections, and means passing through said hinge means, said skin and into said reinforcing means to attach said hinge means to the face of said section.

3,967,672

MAKING FOUNDRY MOULDS

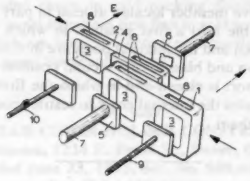
Charles Michael Geoffrey Wallwork, Church Cottage, Birtles Lane, Over Alderley, Cheshire, England

Filed June 26, 1975, Ser. No. 590,713

Claims priority, application United Kingdom, June 26, 1974, 28261/74

Int. Cl.² B22C *15/02*

U.S. Cl. 164—181 9 Claims



8. A machine for automatically producing flaskless foundry moulds, said machine comprising a first slider having a first aperture therethrough, a second slider having a second aperture therethrough, a bolster plate, said first and second sliders each being reciprocable on parallel paths on opposite sides of said bolster plate between first positions in which said apertures are aligned with said bolster plate and second positions in which said apertures are clear of said bolster plate, opposed aligned power-operated first and second pattern plates movable towards opposite sides of said bolster plate and adapted to enter said apertures respectively to define moulding chambers, sand-blowing means adapted to blow sand into said moulding chambers to form therein single-sided moulds back to back, and ejector means aligned with said second positions of said apertures to eject moulds therefrom.

3,967,673

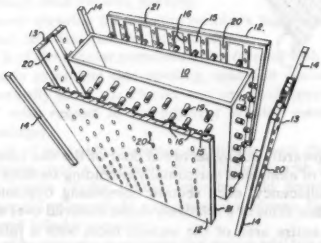
CONTINUOUS-CASTING MOLD WITH MINIMAL THERMAL RESTRAINT AND METHOD OF MAKING

John E. Bower, Jr., Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1974, Ser. No. 531,652

Int. Cl.² B22D *11/04*

U.S. Cl. 164—82 10 Claims



6. A method of minimizing the thermal restraint in a continuous-casting mold having an open-ended liner of a metal of high heat conductivity, backing plates including side and end plates of a different metal for providing mechanical strength secured to said liner by means of rows of vertically spaced studs secured to said liner with vertically spaced matching openings in said backing plates and means including a plurality of channels on the inside faces of said side and end plates for circulating fluid between said backing plates and said liner, the static and dynamic coefficients of friction opposing relative movement between metals of said liner and said backing plates when their surfaces are in direct contact being at least 0.3; said method comprising the step of:

applying a coating selected from the group consisting of Teflon, graphite and molybdenum disulfide to one of said liner and said backing plate to lower the coefficient of friction opposing relative movement to a maximum value of about 0.1, whereby the liner can move readily with respect to said backing plates in response to differential thermal expansion to minimize the restraint of said thermal expansion and thereby minimizing permanent distortions and thermal stresses in said liner.

3,967,674

SEALING STRUCTURE FOR A MACHINE FOR CENTRIFUGALLY CASTING PIPES AND MACHINE INCLUDING SAID STRUCTURE

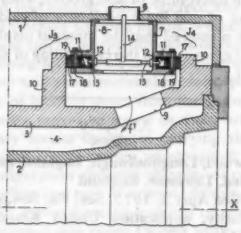
Pierre Henri Marie Fort, Nancy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Feb. 10, 1975, Ser. No. 548,836

Claims priority, application France, Feb. 20, 1974, 74.05757

Int. Cl.² B22D *13/02*; F16J *15/00*

U.S. Cl. 164—297 2 Claims

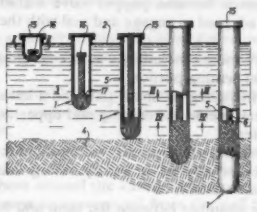


1. In a centrifugal casting machine comprising a rotary mould, a non-rotating casing surrounding the mould, means defining a cooling water circuit for containing water for cooling the mould, the water circuit comprising means defining a water jacket adjacent and surrounding the mould, an annular radial flange integral with the mould, a ring axially spaced from and coaxial with the flange and integral with the casing, the ring and flange being part of the means defining the water circuit; the improvement comprising an annular sealing structure axially interposed between the flange and the ring and consisting of an annular recess which is formed in the ring and defined by two coaxial annular walls radially spaced apart and a transversely extending inner end wall, an inflatable elastically yieldable annular tubular chamber located in the recess in adjoining relation to the inner end wall, means for inflating the annular chamber, a rigid annular sealing member having two coaxial cylindrical surfaces and a planar outer end surface terminating the cylindrical surfaces, the sealing member being mounted in the recess so that said cylindrical surfaces are respectively in close axially slidable contact with said two annular walls and the sealing member is in axially adjoining relation to the chamber, and means for precluding rotation of the sealing member relative to the ring, the sealing member having a portion which extends axially beyond the ring and is defined by a part of said cylindrical surfaces and said outer end surface, which outer end surface is in axially abutting sliding relation to the flange.

3,967,675
METHOD AND DEVICE FOR EXPLOITING THE GEOTHERMAL ENERGY IN A SUBMARINE VOLCANO

Hans Christer Georgii, Stockholm, Sweden, assignor to AB Hydro Betong, Stockholm, Sweden

Filed Apr. 7, 1975, Ser. No. 565,611
Claims priority, application Sweden, Apr. 8, 1974, 7404701
Int. Cl.² E21B *43/24*
U.S. Cl. 165—1 **11 Claims**

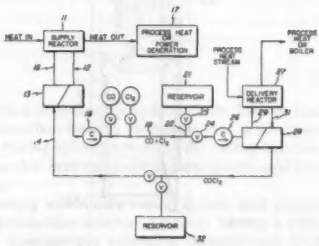


1. A method for exploiting the geothermal energy in a submarine volcano, comprising the steps of arranging an elongated, substantially vertical, columnar concrete body in the orifice of the volcano in such a manner that said concrete body has its lower end submerged in the magma in the orifice of the volcano and extends vertically upwards from the surface of the magma through the water to the water surface above, said concrete body having such a displacement and such a weight that it floats in a balanced position in the magma and the water, and conveying a coolant through internal cooling ducts in said concrete body from the upper end of the body downwards into the lower portion of the concrete body, which is submerged in the magma and where the coolant is heated by heat transfer from the surrounding magma, and returning the heated coolant through internal ducts in the concrete body to the upper end thereof, where the heat content in the heated coolant is utilized.

3,967,676
TRANSPORT OF HEAT AS CHEMICAL ENERGY

Henry S. Spacil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 1, 1974, Ser. No. 484,801
Int. Cl.² F28C *3/00*
U.S. Cl. 165—2 **6 Claims**



1. The process for transporting energy from a source of heat to an energy use area comprising the steps of:

a. decomposing phosgene adjacent said heat source at a temperature in excess of about 700°C to produce a gas mixture consisting principally of carbon monoxide and chlorine,

b. cooling said gas mixture to a temperature below about 40°C,

c. pressurizing and transporting said gas mixture through a first conduit to said energy use area,

d. heating said gas mixture,

e. reacting said gas mixture in the presence of a catalyst at a temperature of at least about 250°C and a pressure of at least one atmosphere to release heat and yield principally phosgene gas,

f. cooling the phosgene gas to a temperature in the range of from about 10°C to about 40°C,

g. conducting said phosgene gas through a second conduit to said heat source,

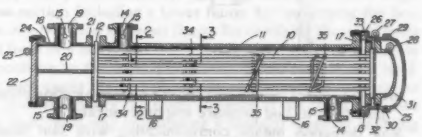
h. heating said phosgene gas and

i. repeating the series of steps set forth above.

3,967,677
HEAT EXCHANGER BAFFLES

Paul Heinze Mohlman, Lawndale, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 28, 1975, Ser. No. 581,457
Int. Cl.² F28F *9/00*
U.S. Cl. 165—162 **3 Claims**



1. In a shell and tube square pitch heat exchanger having a longitudinal shell, tube sheets at opposite ends of said shell, a plurality of parallel tubes in a bundle of generally cylindrical form extending between said tube sheets and arranged in a pattern such that the center lines of any four adjacent tubes are at the corners of a square, means to introduce fluid to said tubes and withdraw fluid from said tubes at the faces of said tube sheets, means to introduce fluid to the interior of said shell external of said tubes and to withdraw fluid therefrom; the improved structure for baffling flow of shell side fluid and for supporting and stabilizing said tubes which comprises a first set of parallel rods extending between said tubes across said shell positioned in alternate spaces between tubes, a second set of parallel rods extending parallel to rods of said first set between said tubes across said shell in the spaces not so occupied by rods of said first set, third and fourth such sets arranged in like manner to said first and second sets, respectively, but at right angles to said first and second sets, successive rods of each set being spaced along the length of the exchanger to define a plane at an acute angle to the axis of said exchanger, whereby the ends of the rods in any said set define an ellipse, the rods being disposed parallel to the minor axis of said ellipse.

3,967,678
STUFFING BOX CONTROL SYSTEM

Henry Wayne Blackwell, Venus, TX, assignor to Dresser Industries, Inc., Dallas, Tex.

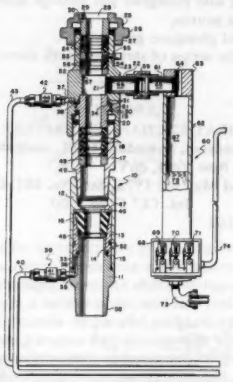
Filed June 2, 1975, Ser. No. 583,146
Int. Cl.² E21B *43/00*
U.S. Cl. 166—53 **15 Claims**

1. A rod-pump stuffing box system for attachment to a wellhead having a rod pumping unit; said system comprising:

housing means adapted to encircle a rod-pump polished rod and attached to a wellhead;

seal means in said housing means adapted to be urged into sealing engagement with said housing means and a polished rod passing therethrough;

piston means mounted slidably in said housing means, having a pressure response surface thereon, and arranged to abut said seal means;



pressure source means adapted for communicating pressurized fluid to said pressure response surface;

leak detection means communicating with said housing means and arranged for detecting well fluid leakage past said seal means; and,

actuator means operably connected to said detection means and said pressure source means and arranged to actuate said pressure source means upon detecting a predetermined amount of well fluid leakage.

3,967,679

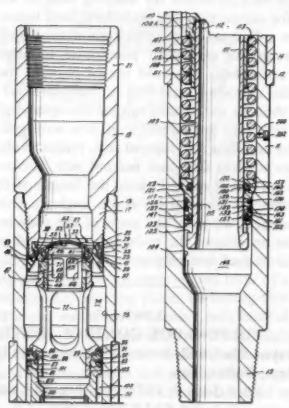
MUD SAVER VALVE

Walter Emanuel Liljestrand, Midland, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Feb. 21, 1975, Ser. No. 551,898

Int. Cl.[2] E21B *21/00, 41/00*

U.S. Cl. 166—224 A **15 Claims**



1. Mud saver valve adapted for connection between a kelly and a string of drill pipe comprising

a tubular valve body having means at its lower end for making connection to a string of drill pipe and tapered threaded and shouldered means at its upper end for making a rotary shouldered connection to a top sub,

a tubular top sub having means at its upper end for making connection to a kelly and tapered threaded and shouldered means at its lower end for making a rotary shouldered connection to said tapered threaded and shouldered means on the valve body,

said top sub having a downwardly facing valve seat forming part of a poppet valve,

closure means for said poppet valve including a seating portion adapted to engage and seal with the poppet valve seat,

said closure means including a stem extending downwardly from said seating portion,

said stem including an upper part and a lower part,

screw thread means connecting said upper and lower parts of the stem,

said stem having a downwardly facing shoulder on the upper part thereof and an upwardly facing shoulder on the lower part thereof,

an annular chamber between the stem and body,

said chamber having an upwardly facing shoulder,

bridge means around said stem overlying said chamber shoulder and said upwardly facing stem shoulder, and

spring means disposed around said stem in said chamber and under compression, bearing at its lower end against said bridge and at its upper end against the downwardly facing shoulder on the stem,

said bridge being separated from the upwardly facing stem shoulder when the valve is in use but engageable with said shoulder when the top sub is unscrewed.

3,967,680

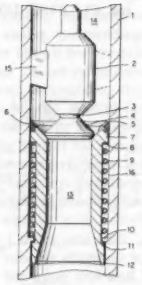
METHOD AND APPARATUS FOR ACTUATING A DOWNHOLE DEVICE CARRIED BY A PIPE STRING

John Doise Jeter, Dallas, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.

Filed Aug. 1, 1974, Ser. No. 493,712

Int. Cl.[2] E21B *23/04, 3/12*

U.S. Cl. 166—250 **18 Claims**



1. A method for selectively actuating downhole devices carried by a pipe string comprising; the establishment of a preselected rotation rate of said pipe string to select the function, for subsequent execution, to be carried out down hole, then changing the rate of flow of fluid through said pipe string from one preselected rate to another to cause execution of the function, then changing at least one of said rates to another value to secure the selected function against further change.

3,967,681

REPAIR OF CEMENT SHEATH AROUND WELL CASING

James E. Curzon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 30, 1975, Ser. No. 618,194
Int. Cl.² E21B *33/138, 33/14*
U.S. Cl. 166—277 3 Claims

1. A method for repairing a cement sheath around a casing in a well bore comprising:

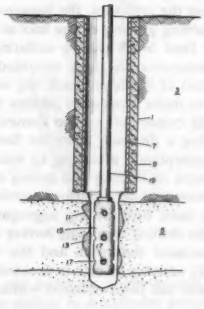
a. inserting a retainer within the casing below perforations in the casing adjacent an area requiring cement sheath repair;
b. inserting a packer within the casing above perforations in the casing adjacent an area requiring cement sheath repair;
c. injecting a gellable polymer composition from the casing through the perforations into the adjacent underground formation;
d. allowing the polymer to gel;
e. thereafter injecting sufficient cementitious material into the well bore around the casing with application of sufficient pressure to squeeze gel from the well bore into the formation and replace the gel with cementitious material;
f. allowing the cementitious material to set under pressure; and
g. removing the packer, cementitious material and retainer from the casing interior.

3,967,682

METHOD OF PRODUCING HYDROCARBONS FROM AN UNCONSOLIDATED FORMATION

Nathan Stein, and John P. Heller, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York City, N.Y.

Filed Apr. 14, 1975, Ser. No. 567,663
Int. Cl.² E21B *43/04*
U.S. Cl. 166—278 6 Claims



5. A method of producing hydrocarbons from an unconsolidated hydrocarbon-bearing formation that is penetrated by a cased well having openings through the casing that provide an open production interval communicating with said formation, comprising:

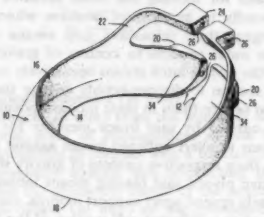
a. positioning within said casing in said well adjacent said open production interval a packer having a plurality of lateral passageways extending therethrough to provide fluid communication intermediate the inside of said casing and the inside of said packer;
b. positioning water-wet granular particles in said casing to essentially fill the annulus formed intermediate said packer and said open production interval;
c. applying pressure via said packer to said water-wet granular particles in said annulus to stabilize said water-wet granular particles; and
d. forming sand arches in said water-wet granular particles to further stabilize said water-wet granular particles.

3,967,683

EQUINE HOOFWEAR

Juan Saavedra Ensinozo, Primera Calle del Casquillo, Edificio "Maitena", Apartment No. 7, Urbanizacion Avila, Caracas, Venezuela

Filed Sept. 27, 1974, Ser. No. 509,816
Int. Cl.² A01L *3/00*
U.S. Cl. 168—4 8 Claims



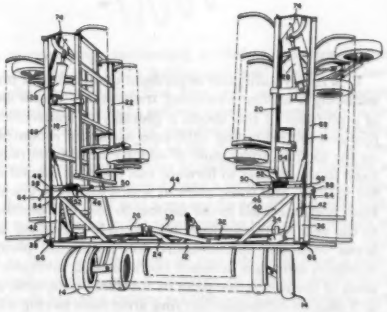
1. Equine footwear comprising a split ring of a configuration approximating the configuration of a hoof and having the split at the heel portion thereof, said ring having an acute angle cross-section including a lower flange for underlying the bottom of a hoof and an upper flange for overlying the outer sides and front of a hoof, said lower flange being inclined upwardly to conform to the normal concavity of the bottom of a hoof, and said upper flange being inclined inwardly to conform to the normal slope of the outer surfaces of the front and sides of a hoof, said ring constituting a resilient material enabling expansion and contraction thereof for mounting and dismounting said ring relative to a hoof and for enabling said hoof to expand and contract during movement of the animal, and means for adjustably and releasably securing the ring ends at the split to positively mount the ring on the hoof, said securing means comprising a strap extending at an angle upwardly and rearwardly from each side of said ring with the ends of said straps curved inwardly toward each other and overlying said ring ends, and releasable, adjustable fastener means joining said strap ends and said ring ends, said straps being integral with said ring.

3,967,684

WINGFOLD POSITIONING DEVICE

Virgil Dean Haverdink, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 1, 1974, Ser. No. 493,539
Int. Cl.² A01B *63/14, 49/00*
U.S. Cl. 172—311 1 Claim



1. In a foldable multiple sectioned farm implement having a center section having ground wheels; outer sections in substantial transverse horizontal alignment with said center sec-

tion; fore-and-aft pivotal connections joining the center and outer sections; the improvement residing in outer section positioning means comprising: a transverse brace member positioned above, substantially abridging the transverse expanse of, and secured to the center section; an outwardly opening U-shaped stop means secured to each end of the brace member above each pivot formed by said pivotal connections; at least one single-acting hydraulic cylinder connected to and for moving the outer sections by its power stroke upwardly to an inboard position whereat the outer sections engage their respective stop means and in which position the outer sections to centers of gravity are located inboard of the pivots; latch means operatively connected with the center section to disconnectibly engage the raised outer sections and secure them in their inboard positions; and biasing means carried by said brace member for abutting said outer sections to exert outward forces against the outer sections when their respective centers of gravity shift inboard of the respective pivots, said biasing means including two pairs of transversely spaced apart support mounts, each of said pairs being secured to a different end portion of the brace member from the other of said pairs, a pair of rods, each of said rods being slidably supported in a different pair of mounts from the other of said rods, said rods being slidably supported in said mounts for transverse movement, each of said rods having a stop secured thereto, a pair of helical springs, each of said helical springs coaxially surrounding one of said rods and extending between one of said support mounts and said stop of said one of said rods.

3,967,685

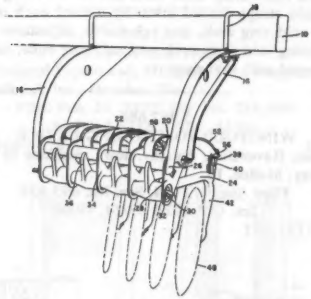
INDEPENDENT AND BIASED CULTIVATOR SUPPORT

David August Siekmeier, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 5, 1974, Ser. No. 485,933

Int. Cl.[2] A01B *35/28, 21/04, 15/16, 5/04*

U.S. Cl. 172—573 **2 Claims**



1. A rotary cultivator implement comprising: a main frame including a toolbar extending transversely across an expanse of a plurality of row crops; a plurality of transversely spaced fore-and-aft extending subframe members mounted in pairs on the toolbar, some pairs of which extend from rear portions fixed to the toolbar to forward end portions spaced in front of the toolbar, and some pairs of which extend rearwardly from front portions fixed to the toolbar to rear end portions spaced to the rear of the toolbar; transversely extending upper and lower vertically spaced-apart and horizontal pivot support members mounted between the aforesaid subframe end portions of the respective pairs of subframe members; a plurality of T-shaped cultivator-carrying arms each having a horizontal stem portion extending rearwardly from and supported on the lower pivot support member for vertical swinging movement thereabout and a rear vertical portion projecting above and below the horizontal portion at its rear end; a plurality of leaf springs supported on the upper pivot support member for vertical swinging movement thereabout, each spring vertically offset above a horizontal arm portion and extending rearwardly from and supported to swing vertically on the upper of the pivot support members; means connecting each spring with the vertical portion above the horizontal portion whereby each spring will yieldably resist upward vertical movement of its respective arm; and rotary cultivator members supported on rear portions of the arms below their respective horizontal portions.

3,967,686

DEVICE FOR GUIDING A DRILL TOOL

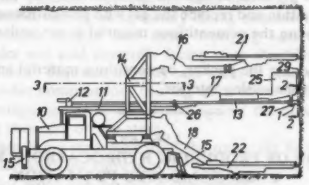
Gosta Fögelström, 9 Nackanasparken, 131 00 Nacka, Sweden

Continuation of Ser. No. 423,002, Dec. 10, 1973. This application May 19, 1975, Ser. No. 578,609

Claims priority, application Sweden, Dec. 13, 1972, 16242/72

Int. Cl.[2] E21C *11/02, 5/00*

U.S. Cl. 173—22 **3 Claims**



1. In a drill rig supporting vehicle including a frame supporting a drilling machine having a feed beam mounted on the vehicle frame, a drill tool connected to the drilling machine and displaceably carried on the feed beam, the feed beam being movable relative to the vehicle frame and a drill guide means for guiding the drill tool, the improvement in the drill guide means enabling guiding of the tool at a substantial distance from the feed beam during collaring of a drill hole comprising a maneuverable arm mounted on the vehicle frame independent of the feed beam, the maneuverable arm being arranged to move separately relative to the feed beam, and a drill guide connected to the maneuverable arm at a location extending a distance from the feed beam, the drill guide being cooperatively arranged to selectively guide the drill tool proximate its drilling end during collaring of a drill hole and being mounted on a platform carried by said maneuverable arm, at least one drilling aggregate carried on the vehicle frame, the drilling aggregate having a drilling machine operatively associated therewith and the drilling aggregate being structurally adapted to drill in proximity to the drill tool after the drill hole has been collared without interferance of the feed beam.

3,967,687

CURB DRAIN HOLE DRILL

Dwight W. Fowler, 705 SW. 206th Ave., Aloha, Oreg. 97005

Filed July 29, 1974, Ser. No. 492,460

Int. Cl.[2] E01C *23/00*

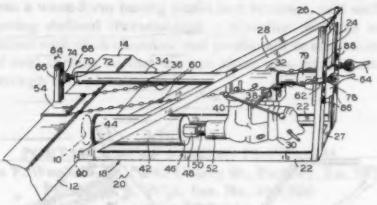
U.S. Cl. 173—32 **5 Claims**

1. Apparatus for drilling a drain hole in a curb forming the edge of a street, said apparatus comprising:

a horizontal support frame adapted to be placed in the street next to the curb in which the drain hole is desired, said frame including horizontally extending legs for abutting the curb on either side of the location of the desired hole, and adapted for supporting a horizontally disposed core drill extending longitudinally of said frame,

a hooking member for placement over the top edge of said curb and including a downwardly extending portion for engaging the rear of said curb, wherein said hooking

member is provided with a leg extending above the level of said curb and horizontal post means interposed between said frame and said leg for applying force toward said leg from the direction of said frame,



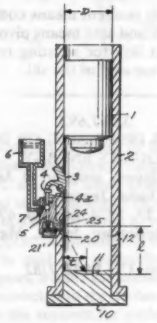
and a pair of chains attached to said hooking member for urging said frame toward said curb including a pair of tightening means for securing said chains relative to said frame.

3,967,688

FUEL INJECTION DEVICE FOR AN IMPACT ATOMIZATION-TYPE DIESEL PILE HAMMER

Noriyasu Inenaga, and Mataji Tateishi, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 497,118, Aug. 12, 1974. This application June 2, 1975, Ser. No. 582,932
Claims priority, application Japan, Aug. 14, 1973, 48-90527
Int. Cl.² E02D 7/12
U.S. Cl. 173—137 **4 Claims**



1. In a diesel pile hammer of the impact atomization type wherein a piston sliding in a cylinder periodically impacts a concave, fuel-receiving saucer provided on an impact block, a fuel injection device for periodically supplying a vertical stream of fuel impinging on the saucer, said fuel injection device comprising:

a nozzle body having means defining a socket therein, in communication with an upstream end thereof;

a bar received in the socket from said end for rotation about its own longitudinal axis, and the socket downstream of the bar defining a vortex chamber;

means for selectively fixing the angular disposition of the bar relative to the nozzle body;

said bar being relieved from along the length thereof to provide a fuel passage from the upstream end of the nozzle body to the vortex chamber, the outlet of said fuel passage into the vortex chamber being laterally displaced from the longitudinal axis of the bar so that rotation of the bar affects the spatial relation of said outlet to said vortex chamber; and,

means defining a nozzle opening extending through the nozzle body from the vortex chamber for ejecting fuel from the vortex chamber;

the bar being so angularly oriented in the socket that both of the following conditions are simultaneously met:

$$\frac{40}{100} D - 20 \leqq t \leqq \frac{60}{100} D \qquad \text{(i)}$$

$$C \leqq \frac{125}{100} D - 7.5, \qquad \text{(ii)}$$

wherein:

D is the cylinder diameter (in mm);

t is the distance (in mm) from the injection nozzle to the geometrical point of impingement of the fuel on the saucer, measured in parallel with a horizontal projection of an imaginary straight line connecting the injection nozzle and the geometric center of the saucer; and,

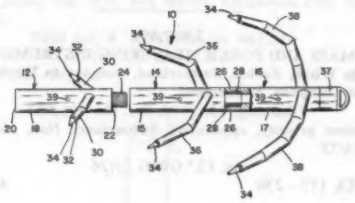
C is the deviation (in mm) of the geometrical point of impingement of the fuel on the saucer from the center of the saucer as represented by the minimum distance from a horizontal projection of an imaginary straight line connecting the injection nozzle and the geometric center of the saucer.

3,967,689

REAMING APPARATUS

Martin D. Cherrington, Sacramento, Calif., assignor to Tidril Corporation, Sacramento, Calif.

Filed Sept. 25, 1974, Ser. No. 508,964
Int. Cl.² E21B 9/22
U.S. Cl. 175—391 **8 Claims**

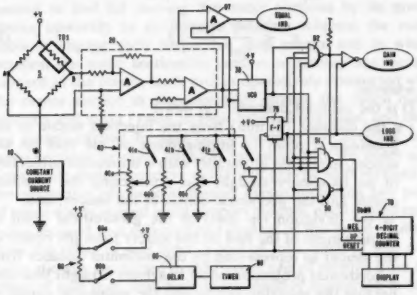


1. A reamer stage comprising a central cylindrical stem having a leading end and a trailing end, said leading end having coupling means of a first type and said trailing means having coupling means of a second type complementary to the first type, and a plurality of circumferential arms extending outwardly from and attached to the cylindrical stem, the free ends of said arms being tubular to provide an axial opening at said free ends, each said arm having a generally arcuate shape so that the free ends of said arms are forwardly and outwardly directed with respect to the stem and the free ends of each of the arms are inclined to the side in a common direction with respect to the axis of the stem so that said arms form a corkscrew configuration, and a plurality of reamer teeth, each reamer tooth having a cutting portion and a shaft portion, said shaft portion adapted to mate with the opening in the free ends of the arms so that the cutting portion of each reamer tooth is coaxial with the free end of each associated arm.

3,967,690
DIGITAL READOUT DIET SCALE

Michael E. Northcutt, Mountain View, Calif., assignor to Aldyne Corporation, Los Altos, Calif.

Continuation-in-part of Ser. No. 445,218, Feb. 25, 1974, abandoned. This application Jan. 7, 1975, Ser. No. 539,109
Int. Cl.² G01G 19/04, 23/14; G06F 7/38
U.S. Cl. 177—25 15 Claims

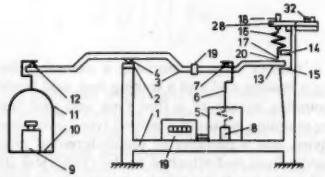


1. A scale for use in a personal dieting program, comprising:
weight measuring means sensitive to weight increments at least as small as ½ pound for a weight measured by said scale;
means for storing a previous measurement of weight for comparison with a subsequent measurement; and
a digital display capable of displaying both said subsequent weight measured by said scale and the difference between said subsequent weight and said previous weight measured, indicating either weight gain or loss, said digital display providing for display of said subsequent weight measurement and said weight difference in increments at least as small as ½ pound, whereby measured weight gains and losses on the order of ½ pound may be observed by the user of said scale to thereby assist his dieting program.

3,967,691
MASS AND FORCE MEASURING INSTRUMENT

Armin Wirth, Zurich, Switzerland, assignor to Wirth, Gallo and Company, Switzerland

Filed Aug. 13, 1974, Ser. No. 496,953
Claims priority, application Switzerland, Nov. 16, 1973, 16253/73
Int. Cl.² G01G 23/26
U.S. Cl. 177—230 4 Claims

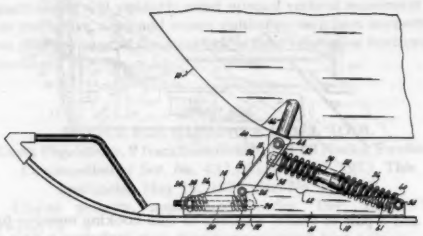


1. In a mass and force measuring instrument comprising a load support, load-compensating means with very small travel, transmission elements transmitting a force depending on the load to the load-compensating means, display means, at least one pair of linearizing springs whose forces vary continuously and act on the load-compensating means in a direction parallel to that of said force depending on the load, said linearizing springs being active each only in a different part of the measuring range.

3,967,692
SNOWMOBILE SUSPENSION SYSTEM

Elmer H. Hoffman, 728 Wilson St., Oconomowoc, Wis. 53066

Filed Sept. 26, 1974, Ser. No. 509,692
Int. Cl.² B62M 27/00
U.S. Cl. 180—5 R 22 Claims

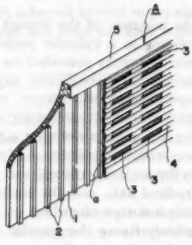


1. A suspension system for mounting an elongated ski like member having forward and rear ends below a vehicle comprising:
a link having a lower end including a pivot point rotatably mounted on a central portion of the ski and an upper end pivotally secured in means on the vehicle, the mounting of said link providing movement in the vertical longitudinal plane of the ski;
first compressively resilient means coupled between said lower end of said link and the ski for inclinedly positioning said link relative to the ski and for resisting first relative pivotal movement between the ski and said link about said pivot point exemplified by a raising of the rear end of the ski; and
second compressively resilient means coupled between the rear end of the ski and said means pivotally securing the upper end of said link for resisting rotation of the ski which raises the rear end of the ski.

3,967,693
APPARATUS FOR DISMISSING OR DECREASING SOUND'S ENERGY

Isao Okawa, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1974, Ser. No. 472,882
Claims priority, application Japan, May 24, 1973, 48-57157[U]
Int. Cl.² E04B 1/82
U.S. Cl. 181—33 G 3 Claims



1. A sound decreasing means for decreasing the pressure of sound at a wall surface comprising:
a vertical wall;
a plurality of spaced apart ribs, each attached to said wall;
an edge plate attached to said ribs and to said wall along the top horizontal edge thereof;

a cover coat laminated to each of said ribs and oriented essentially parallel with said wall so that said cover and said wall form with said ribs and said edge plate a plurality of chambers, said cover comprising a porous surface bent into a wave-form having peaks and recesses, said surface having defined therethrough a plurality of holes associated with each chamber and positioned in said recesses of said surface so that air can enter into each chamber through said plurality of holes.

3,967,694

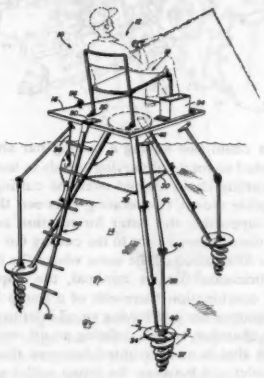
PORTABLE SURF FISHING PLATFORM

Martin Y. Woolfolk, Sr., 3840 Cherry St., Zachary, La. 70791

Filed Aug. 8, 1974, Ser. No. 495,920

Int. Cl.² A47C 7/62

U.S. Cl. 182—82 **10 Claims**



1. A portable platform adapted to be installed in shallow water for surf fishing purposes, comprising a substantially horizontal support, at least three extensible leg assemblies pivotally connected to said support, means connected to said leg assemblies for holding the same in predetermined angular relation to the support, a plurality of bearing plates respectively connected to said leg assemblies in parallel spaced relation to the support, means for anchoring the support, and actuating means connected to the anchoring means and manually operable from the support for embedding the anchoring means in a sandy surface formation below the water, said actuating means including an elongated actuating rod connected to the anchoring means and handle means pivotally connected to the actuating rod above the water for threadedly inserting or withdrawing the anchoring means into or from the sandy surface formation.

3,967,695

YIELDABLE VEHICLE STEP

Bennett N. Waddell, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 17, 1975, Ser. No. 614,054

Int. Cl.² B60R 3/00

U.S. Cl. 182—86 **10 Claims**

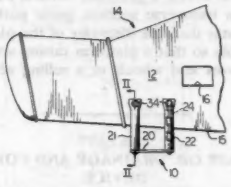
1. A yieldable step for a vehicle having a frame portion including a side surface and a lower edge along such side surface, said yieldable step comprising:

an elongated rigid foot supporting portion;

a pair of upright leg portions, each leg portion including a length of steel chain and a tubular stiffener member of resilient material provided about said chain and substantially coextensive therealong;

means for securing one end of each chain to a respective one of the opposite ends of the foot supporting portion; and

means for attaching the other ends of said chains in spaced apart relation on said side surface of the frame so as to pendantly mount the foot supporting portion in a horizontal position below said frame portion, said means being disposed a sufficient distance above said lower edge of



the side surface so that the adjacent ends of the stiffener members are supported by the side surface, said stiffener members providing sufficient lateral rigidity to said leg portions so as to keep the foot supporting portion in its proper position for normal mounting purposes while permitting the leg portions to be deflectable when the step encounters an obstacle during movement of the vehicle.

3,967,696

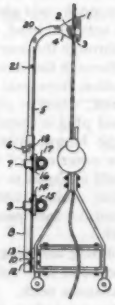
STAGE SAFETY STABILIZER

Donald James Nix, P.O. Box 60396, Oklahoma City, Okla. 73106

Filed July 8, 1974, Ser. No. 462,316

Int. Cl.² E04G 3/10

U.S. Cl. 182—142 **1 Claim**



1. A stabilizer for a cable suspended platform of the type in which vertical movement of the platform is achieved by winding and unwinding an intermediate portion of the cable on a reel mounted on the platform, comprising:

a vertically adjustable davit having a generally vertical depending end portion and having its upper off-set end portion flattened and lying in a vertical plane;

clamp means for connecting the depending end portion of said davit with a lateral surface of the platform;

upper and lower wheels journalled on horizontal axes in vertical spaced relation adjacent the end limit of the

off-set end portion of said davit remote from the vertical axis of its depending end portion; and,

an intermediate wheel journalled on a horizontal axis by the offset end portion of said davit intermediate the vertical spacing between said upper and lower wheels and spaced laterally thereof toward the vertical axis of the depending end portion a distance sufficient to permit lateral movement of the platform suspension cable, when in a slackened condition, between confronting arcs of the peripheries of said wheels at their closest approach to each other,

said wheels each having a grooved periphery with the radius of the groove being substantially the same as the radius of the platform suspending cable,

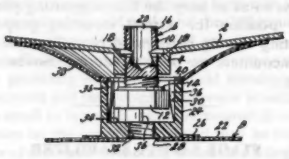
whereby the grooves of said wheels are cooperatively aligned to define a generally vertical substantially circular, in transverse section, guide path diametrically not greater than the diameter of the platform suspension cable so that a platform raising and lowering action moves said wheels in a rolling action along the cable.

3,967,697

CRANKCASE OIL DRAINAGE AND COLLECTION DEVICE

Manfred H. Guenther, Rte. No. 2, Box 290 T, Belton, Mo. 64012

Filed Sept. 23, 1974, Ser. No. 508,512
Int. Cl.² F16N *33/00*
U.S. Cl. 184—1.5 **3 Claims**



1. A device for use in draining and collecting oil from the crankcase of an automotive engine, the crankcase having a bottom drain opening constituting a tubular, internally threaded neck, said device comprising:

a. a drain plug having an externally threaded shank engageable in said crankcase neck, said plug being provided at its outer end with an enlarged head, and having an internal passage opening through the inner end portion of said shank, and laterally through the threaded surface of said shank in spaced relation from said head and from the inner end of said shank, whereby oil may drain through said passage when said plug is threaded outwardly sufficiently to position the lateral opening of said passage outwardly beyond the outer end of said crankcase neck, but with said plug still engaged in said neck, said plug having an intermediate position wherein said head, but not the lateral opening of said passage, is spaced outwardly from said neck,

b. a sealing gasket encircling said plug shank and operable to be compressed between said enlarged head and the outer end of said crankcase neck,

c. an oil container having a tubular neck positionable over said drain plug to receive oil drained from said crankcase through said plug, and

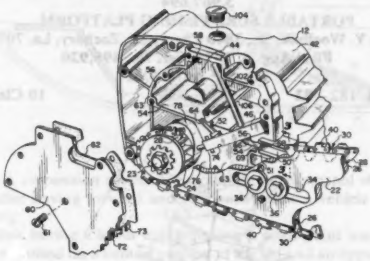
d. means for connecting said container neck to said drain plug, when said drain plug is in said intermediate position, said connecting means comprising flexible tabs carried internally in said container neck, said tabs being resiliently deflectable to admit said enlarged plug head into said container neck, but elastically recoverable to overlie the surface of said head facing said container neck, whereby to support said container from said plug, whereby when said plug is further advanced outwardly to a fully extended position, but still engaged in said crankcase neck, the transverse opening thereof is advanced outwardly beyond the outer end of said crankcase neck.

3,967,698

OILER FOR POWER CHAIN SAW

Richard Thomas Smith, and Michael T. Lay, both of Columbia, Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 20, 1975, Ser. No. 560,535
Int. Cl.² F16N *7/4*
U.S. Cl. 184—15 A **7 Claims**



1. In a power chain saw having a cutting bar and a drive sprocket supported to rotate at varying speeds in line with the cutting bar, a cutting chain trained over the cutting bar and sprocket and guide means cooperating between the cutting bar and chain supporting the latter for rotation around the former, and oil distribution means to the cutting bar and chain guide means for lubrication of the same where the back pressure to the lubrication flow is minimal, the improvement comprising the combination therewith of a pump having an expansible pump chamber and having an oil inlet to and an oil outlet from the chamber, means defining an oil reservoir and an oil flow path that is uninterrupted between the reservoir and the pump inlet and between the pump outlet and the oil distribution means, means driving the pump at a speed related to the speed of the drive sprocket, the pump having oil pumping capacity at the lowest expected drive sprocket speed at least equal to a minimum lubrication flow and having oil pumping capacity well in excess of this minimum lubrication flow at full drive sprocket speed, and bypass flow means extending uninterruptedly from the pump outlet to the reservoir for bypassing the excess pumping capacity, and offering minimal resistence to oil flow therethrough and having its oil discharge point to the reservoir at such an elevation above the oil distribution means to develop a head back pressure against flow of the bypassing oil which of a magnitude minimally greater than the back pressure of the minimum lubrication flow, operable to bypass little, if any oil at the lowest expected drive sprocket speed, but to bypass progressively more oil directly into the reservoir automatically at faster speeds toward the full drive sprocket speed.

3,967,699

HOISTING APPARATUS, PARTICULARLY FOR A COOLING TOWER

Erich Jasch, Leeheim, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Jan. 6, 1975, Ser. No. 538,523
Claims priority, application Germany, Jan. 4, 1974, 2400313
Int. Cl.² B66B *9/16*; E04G *3/16*
U.S. Cl. 187—2 **4 Claims**

1. A hoisting apparatus mounted on a cooling tower including a mast; a cable net framing supported by the mast; and a non-self-supporting casing attached to the framing; comprising in combination:

a. an upper and a lower track of circular, horizontal course; said tracks being vertically spaced from one another and

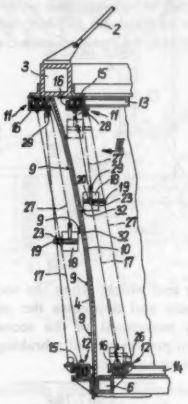
extending along said casing substantially concentrically with respect to said mast;

b. an upper traveling block movably mounted on said upper track and a lower traveling block movably mounted on said lower track;

c. two horizontally spaced, parallel guide cables attached to and linearly tensioned between said upper and lower traveling blocks;

d. a hoisting cage situated between said upper and lower traveling blocks;

e. hoisting means secured to at least one of said traveling blocks and said hoisting cage for raising and lowering said hoisting cage between said traveling blocks;



f. an adjusting means connecting each guide cable to said hoisting cage for horizontally displacing said hoisting cage with respect to said guide cables in a direction substantially perpendicular to said casing;

g. a guide sleeve surrounding each said guide cable and being longitudinally slidable thereon;

h. coupling means pivotally attaching said adjusting means to the associated guide sleeve for providing for a pivotal movement of said adjusting means about a horizontal axis perpendicular to the two parallel guide cables; and

i. propelling means for moving said upper and lower traveling blocks on and along the respective upper and lower tracks.

3,967,700

SIGNALING SYSTEM

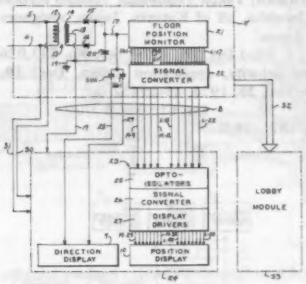
Charles J. Tur, Mequon, and Donald J. Kopydlowski, Milwaukee, both of Wis., assignors to Armor Elevator Company, Inc., Louisville, Ky.

Filed Aug. 5, 1974, Ser. No. 494,722

Int. Cl.² B66B *3/02*

U.S. Cl. 187—29 R **28 Claims**

1. An elevator system connected to a structure having a plurality of floors and comprising an elevator car, means mounting said car for movement relative to the structure to serve said floors, and control means moving said car and stopping said car at floors and including means sensing the relative position of said car with respect to said floors and connected to position indicating means remotely located with respect to said sensing means and selectively displaying at least one of a plurality of characters and indicating the position of said car with respect to said floors, said position indicating means including a plurality of light emitting segments including first, second and third substantially horizontal segments vertically spaced with respect to each other and each including first and second spaced end portions, a fourth substantially vertical segment located adjacent to said second ends of said first and second segments, a fifth substantially vertical segment located adjacent to said second ends of said second and third segments, a sixth substantially vertical segment located adjacent to said first ends of said first and second segments, a seventh substantially vertical segment located adjacent to said first ends of said second and third segments, and an eighth segment having first and second portions with said first portion located adjacent to and in substantial horizontal alignment with said first end of said first segment and



located adjacent to said sixth segment and said second portion located adjacent to and in substantial horizontal alignment with said first end of said third segment and located adjacent to said seventh segment, said control means including means operatively connected to said sensing means and selectively energizing one or more of said segments to selectively display a character selected from said plurality of characters including the numbers 0–9 and the letter B for indicating the position of said elevator car.

3,967,701

MULTI-COLUMN LIFTING APPARATUS AND SYNCHRONIZATION CONTROL DEVICE FOR SAME

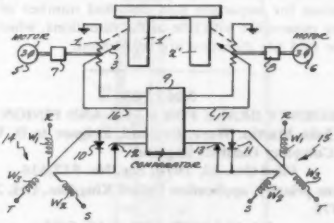
Horst Hegenbart, Schwanheim, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Oct. 9, 1974, Ser. No. 513,512

Claims priority, application Germany, Oct. 29, 1973, 2354064

Int. Cl.² B66B *1/30*

U.S. Cl. 187—29 R **12 Claims**



1. A lifting apparatus comprising

a plurality of columns, a respective carriage vertically movable along each column,

means supported by the carriages for carrying a load to be lifted,

a respective electrical polyphase current motor operable to move each said carriage,

a sensing means operatively associated with each said column and operable to deliver an electrical signal depending on the height of lift of the respective carriage,

comparing means connected to said sensing means for receiving and comparing said signals, and

an electronic polyphase current switch controllable by the comparing means and actuated thereby, when there is a difference between the signals from the sensing means, to supply a reduced current to the respective one of said motors.

3,967,702

CONTROL APPARATUS FOR ELEVATORS

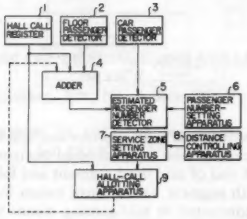
Tatsuo Iwaska; Takeo Yuminaka; Takashi Kaneko, and Hiroshi Kinoshita, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 16, 1974, Ser. No. 533,026

Claims priority, application Japan, Dec. 19, 1973, 48-141213; Feb. 20, 1974, 49-19432

Int. Cl.² B66B *3/00*

U.S. Cl. 187—29 R **20 Claims**



1. A control apparatus for elevators comprising a registrating means installed at an elevator hall for registrating hall calls for the up-direction and the down-direction to thereby make elevator cars to service in accordance with the directions of the registrated hall calls, characterized by a detection means for detecting the number of passengers awaiting the cars at hall for each of the directions of the registrated hall calls, which detection means comprises means for detecting the number of the car awaiting passengers at the elevator hall, means for detecting the registration of the hall calls for the up- and down-directions at the same hall, means for setting ratios for dividing the number of the car awaiting passengers for each of the up- and down-directions, means for dividing said detected number of the car awaiting passengers for the up-direction and for the down-direction on the basis of said set ratios, when the hall calls for both directions are registrated, and means for imparting said detected number of the car awaiting passengers with one of the directions, when the hall calls for said one direction are registrated.

3,967,703

EMERGENCY BRAKE FOR RACK AND PINION HOIST

Derek John Martin, Ware, England, assignor to D. Wickham and Company Limited, England

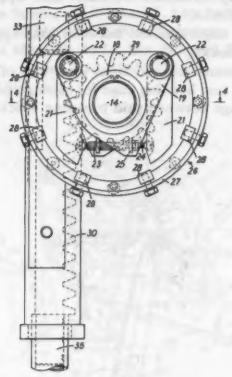
Filed Oct. 24, 1974, Ser. No. 517,616

Claims priority, application United Kingdom, Oct. 24, 1973, 49568/73

Int. Cl.² B66B *5/04, 5/16, 5/28*

U.S. Cl. 187—78 **7 Claims**

1. A rack-and-pinion hoist comprising a mast, a cage adapted to travel along said mast, and containing pinion means, means for driving said pinion means, a first rack extending along the mast and in engaging relationship with said pinion means, a braking apparatus comprising a second, vertically extending rack, a hydraulic piston-and-cylinder buffer means, and a rotatable shaft means carried by said cage, said rotatable shaft being positively engaged with said first rack and thereby driven in rotation by the movement of the cage along said mast, and connecting means for engaging the shaft and the buffer means, said connecting means comprising a centrifugal governor driven by the rotation of the shaft and operating in response to a rotation of the shaft in excess of a predetermined rate of rotation to provide positive drive to said second rack, said second rack being vertically movable and



having an upper end which, when the second rack is driven upwardly, contacts and depresses the piston of the buffer means, whereby movement of the second rack is initially opposed and then prevented and a braking force is applied to the shaft and hence to the cage.

3,967,704

VEHICLE DECELERATING MEANS

Dennis Henry Ogden, Wolverhampton, England, assignor to British Industrial Plastics Limited, Manchester, England

Continuation-in-part of Ser. No. 863,899, Oct. 6, 1969, abandoned. This application Dec. 14, 1971, Ser. No. 207,947

Claims priority, application United Kingdom, Oct. 7, 1968, 47410/68

Int. Cl.² B60T *1/04*

U.S. Cl. 188—32 **12 Claims**

1. A method of forming a retarding bed of crushable material adjacent to a vehicle track comprising the steps of forming a foam from an aminoplast resin composition, laying down said foam adjacent to the vehicle track and curing the foam in situ to produce a non-resilient, cured foam body having a compressive strength between 15 and 50 p.s.i. and a density of from 0.25 to 10 lb. per cu. f.t.

3,967,705

APPLICATION ADJUSTER FOR DISC BRAKE

Donald D. Johannesen, and James J. Colpaert, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Apr. 2, 1975, Ser. No. 564,511

Int. Cl.² F16D *65/56*

U.S. Cl. 188—71.9 **4 Claims**

1. In a disc brake:

a rotor having a pair of friction faces;

a pair of friction elements, one of said elements being disposed adjacent each of said friction faces;

a fixed support;

a caliper housing slidably mounted on said fixed support and straddling said rotor, said caliper housing engaging each of said friction elements for urging the latter into

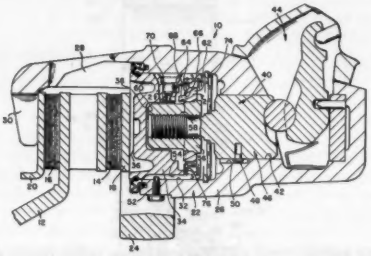
braking engagement with their corresponding friction faces when a brake application is effected;

mechanical actuating means within said housing for forcing said friction elements into braking engagement with their corresponding friction faces;

said mechanical actuating means including an axially extensible member slidably mounted in said housing, means for driving said extensible member toward said rotor when a brake application is effected, and ratchet means for extending said extensible member as the extensible member is driven toward said rotor, said extension of the extensible member taking place during brake actuation before substantial braking forces are transmitted through the extensible member;

said caliper housing defining a bore therewithin;

a piston member slidably mounted in said bore and associated with a corresponding one of said friction elements;



said axially extensible member being located between said piston and said means for driving the extensible member toward the rotor, said extensible member engaging said piston during a brake application to urge the latter and the friction element associated therewith toward said rotor, and resilient means operably connected to said extensible member for urging the latter away from the rotor upon brake release;

said ratchet means being carried by said piston member and by said extensible member;

said resilient means urging said extensible member away from said piston upon brake release;

said ratchet means being effective upon release of the brake and movement of the extensible member away from the piston member to index said ratchet means if the extensible member moves away from the piston member by more than a predetermined amount, said ratchet means after indexing upon brake release being effective to extend said extensible member upon a subsequent brake application.

3,967,706
MATERIAL HANDLING APPARATUS WITH IMPROVED FAIL-SAFE BRAKE SYSTEM

Raymond J. King, Green Bay, Wis., assignor to Northwest Engineering Company, Green Bay, Wis.

Filed May 22, 1974, Ser. No. 472,215
Int. Cl.² F16D *65/24*
U.S. Cl. 188—170 **1 Claim**

1. In a material handling machine having a drive shaft:

a. a closed housing receiving at least the inner end portion of said shaft,

b. disc brake means extending between said shaft and said housing,

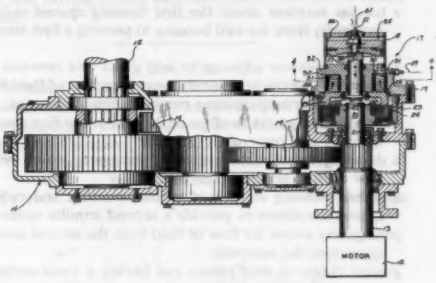
c. a pressure plate disposed within said housing and engaging said brake means,

d. a piston disposed in a chamber disposed at one end of said housing and with said piston having a rod coaxial with said drive shaft and mounted to said pressure plate,

e. a plurality of circumferentially spaced springs with each spring disposed in an independent recess within said housing and with said springs biasing said pressure plate to normally engage said brake means,

f. means to pressurize the inner portion of said chamber to move said piston and pressure plate outwardly to thereby release said brake,

g. and means to purge the interior of said brake housing, said last-named means comprising:



1. an air inlet passage extending through said housing and piston rod,

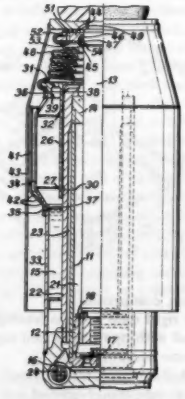
2. an air discharge passage disposed in said housing and connected with the lowermost of said recesses,

3. and means to provide pressurized air to said inlet passage so that air flows through said disc brake means and recesses and out through said discharge passage.

3,967,707
LIQUID DAMPERS

Quinton Healey Carlton, Leamington Spa, England, assignor to Oleo International Holdings Limited, Leamington Spa, England

Filed Nov. 21, 1974, Ser. No. 525,833
Claims priority, application Germany, Nov. 21, 1973, 53938/73
Int. Cl.² F16F *9/19, 9/48*
U.S. Cl. 188—284 **23 Claims**



1. A liquid damper comprising

a first cylindrical housing enclosing a chamber having first and second ends,

a piston slidably disposed for longitudinal movement in the chamber,

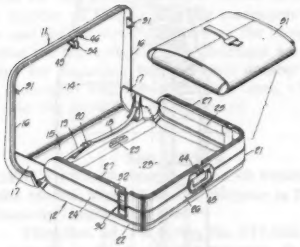
a gland sealing the first end of the chamber,
a piston rod attached to the piston and slidably disposed through the gland,
means for flow of fluid through the piston only towards the gland as the piston moves in the chamber,
a reservoir for storage of fluid adjacent to the second end of the chamber,
means between the reservoir and the chamber comprising a valve which permits flow of fluid only from the reservoir to the chamber,
a tubular member about the first housing spaced radially outwardly from the said housing to provide a first annular space,
a first passageway adjacent to said gland and between the chamber and the first annular space for flow of fluid from the chamber as the piston moves in either direction,
a second passageway for flow of fluid from the first annular space to said reservoir,
a damping valve in said second passageway which resists flow of fluid into the reservoir,
a second housing about said tubular member and radially spaced therefrom to provide a second annular space,
passageway means for flow of fluid from the second annular space into the reservoir,
groove means in said piston rod having a cross-sectional area which varies along said piston rod and is disposed on the piston rod where it will enter the chamber as the piston moves away from said gland, said groove means and second annular space combining to form a by-pass for fluid from the chamber around said damper valve into the said reservoir, and
an annular moveable wall about said piston rod and secured thereto at a point spaced longitudinally from the gland beyond the groove means to form a fluid tight seal and enclose a space about the piston rod.

3,967,708

LUGGAGE CASE

James S. Gregg; Charles J. Scott; Donna A. Sulter, all of Denver, Colo.; James P. Sullivan, Tustin, Calif.; Joseph A. Woodburn, Denver, Colo., and David E. Workman, Orange, Calif., assignors to Samsonite Corporation, Denver, Colo.

Filed Mar. 6, 1975, Ser. No. 555,858
Int. Cl.² A45C *5/00*
U.S. Cl. 190—41 B **8 Claims**



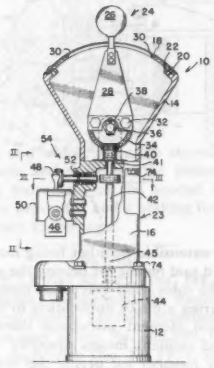
1. A luggage case, comprising:
a first L-shaped rigid case section having a side panel and a bottom panel with open sides and top;
a second rigid case section including,
a U-shaped shell defining top and end panels, and
a shallow shell side panel affixed over one side of the U-shaped shell leaving the bottom and other side of the U-shaped shell open; and
means pivotally interconnecting the exposed edge of said shallow shell side panel with the bottom panel of said L-shaped case section such that the L-shaped case section is pivotable to a position such that the side panel of said second case section lies in the same plane with the plane of said L-shaped case section bottom panel.

3,967,709

INTERLOCK SYSTEM FOR PARKING BRAKE AND TRANSMISSION CONTROL

Carroll R. Cole; Richard E. Guhl, and Larry R. Logemann, all of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1974, Ser. No. 531,266
Int. Cl.² B60K *29/02*
U.S. Cl. 192—4 A **6 Claims**



1. A console attachable to a vehicle to control a transmission thereof, comprising:
an enclosure with a slot therethrough;
a gear shift regulator extending from said enclosure through said slot, said regulator having a handle extending from said enclosure and shaft means within said enclosure, a first end of said shaft means communicating with said handle, said shaft means including a shaft which rotates about its longitudinal axis responsive to movement of said handle in said slot, a second end of said shaft means activating via rotation of said shaft a transmission control switch which controls the transmission of said vehicle and has a neutral setting;
a parking brake actuator located adjacent where said enclosure surrounds said rotating shaft, said actuator serving to control a parking brake of said vehicle; and
an interlocking system comprising a pin within a bore in said enclosure, said pin being holdable within said bore by said actuator contacting one end thereof when said actuator is in position to cause engagement of said parking brake, said rotating shaft including a cavity adapted to receive the other end of said pin only when said regulator is in said neutral setting thereby preventing rotation of said rotating shaft, said interlocking system further comprising biasing means to normally bias said pin away from said cavity, said pin being held with its other end in said cavity by said actuator contacting said one end thereof.

3,967,710
CLUTCH SHIFTER

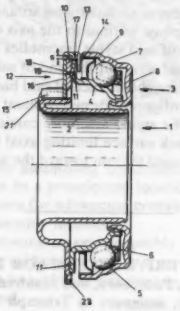
Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Dec. 6, 1974, Ser. No. 530,309

Claims priority, application Germany, Dec. 21, 1973, 2363840

Int. Cl.² F16D *19/00*

U.S. Cl. 192—98 **9 Claims**



1. A clutch shifter comprisng a sliding sleeve having a radially extending portion and an antifriction bearing having a rotating ring and a nonrotating ring including a flange, fastening means for fastening said nonrotating ring in the sliding sleeve, said fastening means including at least one buckle embracing said radial portion of said sliding sleeve and said flange of said nonrotating ring with a radial play, said buckle including a plurality of extending arms for the reception of a disengaging fork.

3,967,711
RATCHET TYPE SAFETY CLAW CLUTCH

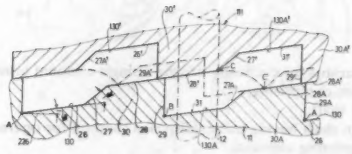
Reinhold Stroezel, Leinfelden; Alfred Hettich, Stetten, and Manfred Kirn, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 3, 1974, Ser. No. 511,912

Claims priority, application Germany, Oct. 12, 1973, 2351240

Int. Cl.² F16D *11/00*

U.S. Cl. 192—108 **10 Claims**



1. A safety claw clutch, comprising coaxial driving and driven clutch elements at least one of which is movable axially toward and away from the other of said clutch elements; means for yieldably biasing said one clutch element toward said other clutch element; and means for rotating said driving clutch element in a predetermined direction, said clutch elements having adjacent end faces provided with annuli of alternating claws and recesses and the claws of said driving clutch element normally extending into the recesses of said driven clutch element and vice versa so that said driving clutch element normally rotates said driven clutch element in said direction, said end faces of said clutch elements having first surfaces constituting the bottom surfaces of the respective recesses and making a first acute angle with a plane which is normal to the common axis of said clutch elements and the claws of said driving and driven clutch elements respectively having front and rear surfaces each making with said plane a second acute angle, each of said front and rear surfaces being adjacent to a first surface of the respective end face and each of said front surfaces abutting against one of said rear surfaces when said driving clutch element rotates said driven clutch element.

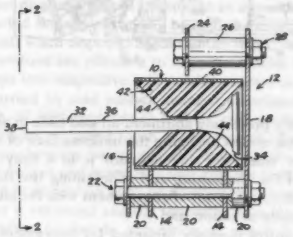
3,967,712
WORK CARRIER FOR GRAVITY CONVEYORS

Andrew J. Waitkins, Mount Clemens; Ralph E. Beyer, Fraser, and Lungchuck Wong, Warren, all of Mich., assignors to F. Jos. Lamb Company, Warren, Mich.

Filed Dec. 24, 1974, Ser. No. 536,083

Int. Cl.² B65G *11/00*

U.S. Cl. 193—1 **10 Claims**



1. In combination with a conveyor of the type having a pair of longitudinally extending side rails connected together in transversely spaced apart relation and support means disposed between said side rails and providing a support surface disposed at a level below the upper edges of said side rails, a workpiece carrier comprising a means defining a hollow circular cylindrical metal shell which is open at both ends and nonmetallic insert fixed therein, said shell extending at its opposite ends to at least the ends of said insert so that at its opposite ends the axially outermost portion of the carrier is defined by at least an annular metal surface, each end of said shell lying in a plane perpendicular to the central axis of the shell, said insert having an axial bore extending therethrough which is coaxial with said shell, said shell and said insert being symmetrical both radially and axially about the midpoint of the axis of the bore of said insert, the axially central portion of said bore being cylindrical and of uniform circular shape whereby a workpiece can be supported by the insert by inserting the workpiece into either end of said bore and the carrier can be supported on said support means with its axis extending horizontally or vertically, and support means engaging the metallic outer peripheral surface of said shell forming means when the carrier is supported with its axis extending horizontally and the support means engaging either of said annular metal surfaces when the carrier is supported with its axis extending vertically.

3,967,713
SLIDE ACTUATOR AND MEANS CONTROLLING MOVEMENT OF SAME BETWEEN FULLY RETRACTED AND FULLY ADVANCED POSITIONS

Mitchell A. Hall, Fort Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.

Filed June 18, 1975, Ser. No. 587,902

Int. Cl.² G07F *5/05*

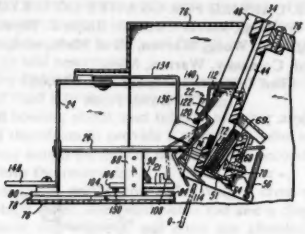
U.S. Cl. 194—92 **27 Claims**

1. A device of the class described, comprising:

an elongate slide actuator reciprocably mounted for movement between fully retracted and fully advanced positions, said actuator including latch means intermediate its length;

an elongate latch member, having front and rear ends, said member pivotally mounted for movement of the rear end thereof between interfering and non-interfering positions relative to the latch means of said slide actuator;

means yieldably urging the rear end of said latch member into engagement with the latch means of the slide actuator for precluding movement thereof from retracted to advanced positions;



an upwardly projecting abutment on said slide in advance of said latch means engaging the undersurface of said latch member when the side actuator is in a fully retracted position for positioning and maintaining the rear end of the latch member out of engagement with the latch means of the slide actuator; and

a latch control member mounted for movement between interfering and non-interfering positions relative to the front end of the latch member, said latch control member, when in interfering relationship with the front end of the latch member, maintaining the rear end of the latch member out of engagement with the latch means of the slide actuator, thereby permitting movement of the slide actuator from retracted to a fully advanced position.

3,967,714

MATRIX PRINTER HAVING DETACHABLE ELEMENTS

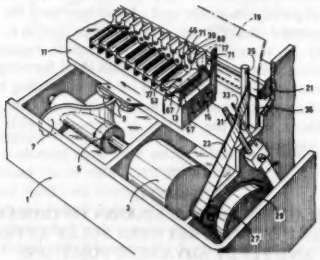
Theodorus Gerhardus Potma, and Wilhelmus Adrianus Henricus Gijzen, both of Rijswijk, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,389

Claims priority, application Netherlands, May 30, 1973, 7307523

Int. Cl.² B41J *3/04*

U.S. Cl. 197—1 R **6 Claims**



1. A matrix printer for cooperation with an associated recording sheet which comprises: an elongated bar-shaped member; means for moving said member across the associated recording sheet; a plurality of holders carried by said member; a plurality of straight mutually parallel recording stylus assemblies each being carried by one of said holders and each including one stylus, each stylus being elongated and disposed in a common plane with the axis thereof at the same predetermined distance from each adjacent stylus, each stylus assembly including means for moving each stylus perpendicular to the recording sheet responsive to electric energization; and means for moving the recording sheet in a direction transverse to the direction of movement of said bar-shaped member; each of said holders comprising a seat and a back surface disposed in orthogonal relationship; each stylus assembly being detachable and having a substantially cylindrical housing; each of said holder seats having an arcuate surface having a cross-section in a plane normal to the axis of the styli which is arcuate; and each of said stylus assemblies including a bearing for support of said stylus at the end of said stylus which is closest to the recording sheet, each of said back surfaces being dimensioned and configured for engagement with the exterior of said bearing of the stylus assembly carried by any one of said holders, said back surface limiting axial movement of the stylus assembly disposed therein toward the associated recording sheet.

3,967,715

INTERMITTENT DRIVE SYSTEM FOR TYPEWRITERS

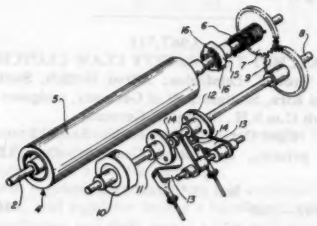
Hermann Kohlhage, Paderborn, and Manfred Link, Nurnberg, both of Germany, assignors to Triumph Werke Nurnberg A.G., Nurnberg, Germany

Filed May 8, 1975, Ser. No. 575,790

Claims priority, application Germany, May 27, 1974, 2425527

Int. Cl.² B41J *23/08*

U.S. Cl. 197—16 **6 Claims**



1. Apparatus for cyclically driving a single-element printing mechanism comprising;

a drive shaft;

a driven shaft having means disposed thereon for operating the printing element,

a cycle clutch for selectively engaging the drive shaft with the driven shaft,

a friction wheel mounted on the driven shaft for maintaining the speed of the driven shaft constant relative to the drive shaft,

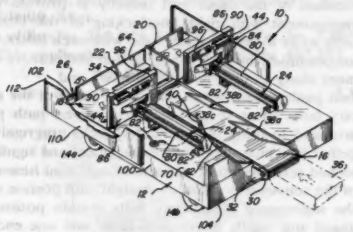
a roll mounted on the drive shaft for frictional engagement with the friction wheel during the clutch cycle, and wherein

said friction wheel is provided with at least one flattened portion disposed at the periphery of the wheel and the wheel is so disposed on the driven shaft that a flattened portion of the wheel faces the roll when the drive shaft is disengaged from the driven shaft.

3,967,716
APPARATUS FOR LOADING CARTONS

John S. Smith, 3000 Colorado Ave., Boulder, Colo. 80303

Filed Dec. 9, 1974, Ser. No. 530,809
Int. Cl.² B65G 47/26, 47/24
U.S. Cl. 198—24 8 Claims



1. Apparatus for assembling containers and delivering the containers in rows to a preselected location comprising:

a. conveyor means for advancing containers in a first direction to an assembly location,

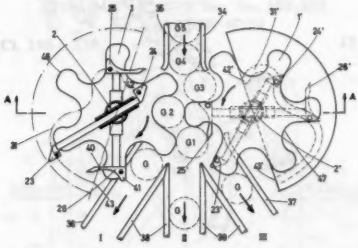
b. positioning means at said assembly location for selectively moving said containers in a second direction at an angle relative to said first direction to form a row of said containers, and

c. at least one ram member disposed adjacent to one side of said conveyor means which is selectively operable in engaging the row of containers at the assembly location along the length of the row to push the row as a unit in said first direction, said ram member including a selectively extensible plate means adapted to be extended at least partially across said conveyor to engage a container in said row in alignment with the conveyor.

3,967,717
APPARATUS FOR DISTRIBUTING ARTICLES SUPPLIED ALONG ONE PATH TO SEVERAL PATHS

Everhard Bauer, Hudeweg 2, 479 Paderborn, Germany

Filed Jan. 13, 1975, Ser. No. 540,636
Claims priority, application Germany, Jan. 14, 1974, 2401587
Int. Cl.² B65G 47/26
U.S. Cl. 198—31 AA 5 Claims

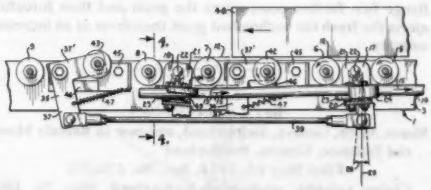


1. Apparatus for uniformly distributing articles arriving in a supply lane uniformly amongst three discharge lanes, comprising juxtaposed first and second similar star wheels mounted for rotation about rotary axes disposed in a common vertical plane, each said star wheel having a number of teeth that are divisible by three, with the teeth being of equal lengths and disposed at regular circumferential intervals to define similar radially outwardly open pockets between one another, in each of which one said article can be received, coupling means operatively connecting the star wheels for rotation in unison in opposite directions, the relative rotary position of the star wheels being set so that the crest of a first tooth on said first wheel when disposed in said common plane lies opposite the pocket formed between first and second teeth of said second wheel, stationary guide means effective to lead said arriving articles to an inlet bight defined by the star wheels, whereby said arriving articles enter successive said pockets offered to said inlet bight during rotation of the star wheels and are urged towards the bottom of the pockets by the crests of the respective opposingly disposed teeth, stationary guide means defining juxtaposed entrances to said three discharge lanes adjacent an outlet bight formed by said star wheels, the central of said entrances being located midway between said star wheels and the outside of said entrances being disposed adjacent respective said star wheels, a pusher member associated with each of said first tooth of said first star wheel, a second preceding tooth of said first star wheel, said first tooth of said second star wheel and a third following tooth of said second star wheel, each of said pusher members being disposed adjacent the trailing edge of its associated tooth and being mounted for reciprocation between a position at which it is retracted radially inwardly behind the crest of the associated tooth when disposed at said inlet bight to a position at which it is projected radially outwardly beyond the crest of the associated tooth when disposed at said outlet bight, whereby said pusher members are effective to urge the articles from opposite pockets into respective said outside entrances, an ejector tongue carried by said pusher member associated with said first tooth of said first wheel and by said pusher member associated with said third tooth of said second wheel, each of said ejector tongues being directed towards the respective preceding pocket and being movable with the pusher member by which it is carried so as to be displaceable from a position at which it is retracted radially inwardly from the bottom of said preceding pocket to a position at which it ejects the article from said preceding pocket towards said central entrance, and control means for synchronizing reciprocation of said pusher members with the rotary motion of said star wheels.

3,967,718
LIVE ROLLER CONVEYOR

Carl M. Monahan, Williamsport, Ohio, assignor to Versa Corporation, Sterling, Ohio

Filed Jan. 17, 1975, Ser. No. 541,856
Int. Cl.² B65G 13/02
U.S. Cl. 198—127 R 12 Claims



1. In an accumulating roller conveyor having a plurality of spaced driving rollers forming a conveyor path:

a. an elongated propelling member positioned generally along said path and near said rollers;

b. a pair of spaced-apart tracking wheels each having a peripheral surface and an axis and gripping said propelling member on said surfaces therebetween; and

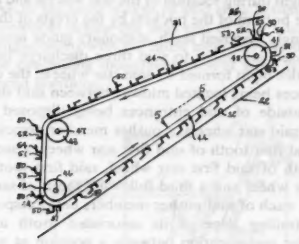
c. means for selectively tilting said wheels and thereby imparting a transverse force component to said propelling member and selectively urging same along said surfaces in the general direction of said tracking wheel axes into and out of driving engagement with adjacent driving rollers.

3,967,719

COMBINE CONVEYOR MEANS

Earl W. Kloefkorn, and Melvin L. Kloefkorn, both of Manchester, Okla. 73758

Filed Jan. 4, 1973, Ser. No. 320,999
Int. Cl.[2] B65G 19/00
U.S. Cl. 198—175 7 Claims



1. In a combine for harvesting grain, a conveyor means mounted in a feeder housing comprising:

a. sprocket drive wheel means and sprocket driven wheel means rotatably connected to said feeder housing;

b. said feeder housing having an upwardly inclined bottom pan to receive grain thereon;

c. a sprocket chain means disposed over and driven by said sprocket drive wheel means and disposed over and carried by said sprocket driven wheel means;

d. said sprocket chain means having an inclined substantial portion parallel to and adjacent said bottom wall of said feeder housing;

e. a plurality of transverse slot means connected to and carried by said sprocket chain means at oppositely disposed links thereof;

f. each of said transverse slot means having first and second parallel legs interconnected by an intermediate leg being of generally U-shape in transverse cross section and a rearwardly extending flange integral with said second leg;

g. said rearwardly extended flange and said intermediate leg parallel to each other and said bottom pan; and

h. outer surfaces of said first leg and said rearwardly extending flange cooperate to compress grain against said bottom pan while moving upwardly by said sprocket chain means;

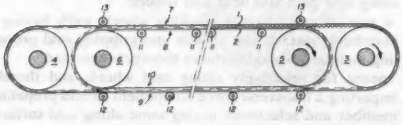
whereby on initiating movement about said sprocket drive wheel means, said outer surface of said rearwardly extending flange first further compresses the grain and then forcefully ejects the fresh cut unthreshed grain therefrom at an increased velocity.

3,967,720

BELT CONVEYORS

Simon Arieh, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed May 15, 1974, Ser. No. 470,290
Claims priority, application Switzerland, May 16, 1973, 6942/73
Int. Cl.[2] B65G 16/30
U.S. Cl. 198—193 9 Claims



1. A belt conveyor having at least one straight load bearing zone and comprising:

a. a pair of flexible elementary belts each having a neutral axis and a reinforcing layer embedded in the vicinity of said neutral axis so as to reinforce each belt at least longitudinally;

b. a regular array of projections and intermediate recesses arranged on one side of each elementary belt so that the projections of one belt fit exactly into corresponding recesses of the other belt thereby to provide positive engagement with rigid interlocking of the elementary belts so as to render them solid with each other, at least longitudinally by their superposition and positive engagement along straight portions thereof; and

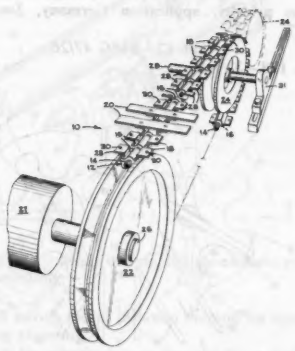
c. belt guide means which define the paths of the elementary belts so as to provide: first curved path portions arranged to bring the elementary belts progressively together into mutual positive engagement and rigidly interlocked relationship at one end of said load bearing zone of the conveyor; a common straight path portion wherein the superposed elementary belts remain positively engaged and rigidly interlocked from said one end to the opposite end of the straight load bearing zone and are thereby made solid with each other at least longitudinally whereby to transmit shear forces due to flexure from one belt to the other, so that the elementary belts thereby form together a straight, rigid composite beam assembly wherein the respective reinforcing layers of the belts of this assembly exert a combined reinforcing action providing substantial rigidification of the composite beam assembly; and second curved path portions arranged to progressively disengage and thereby separate said elementary belts beyond said opposite end of the load bearing zone, whereby said belts may separately undergo a desired directional change along their respective second curved path portions.

3,967,721

BELT DRIVE CONVEYOR SYSTEM

Ivan E. Rhoden, Plainfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed July 8, 1974, Ser. No. 486,552
Int. Cl.[2] B65G 17/12, 17/42
U.S. Cl. 198—195 8 Claims



1. A low noise level conveyor system comprising a pair of spaced wheels, a flexible longitudinal tensile element, a plurality of resilient driving blocks mounted on said tensile element in spaced apart relation, said driving blocks formed for receipt on said wheels, splicing means to join the ends of said tensile element to form an endless band to be received over said wheels, and a separate load support member secured to each of said resilient driving blocks on said endless band, each said member including a curved portion embedded within said block adjacent said tensile element and in overlying and gen-

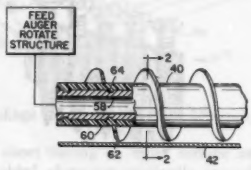
erally conforming relation to said tensile element when said members are in load-supporting relation.

3,967,722

SAMPLE FEED AUGER STRUCTURE

Harry W. Dietert, Kerrville, Tex., assignor to Harry W. Dietert Co., Detroit, Mich.

Division of Ser. No. 260,985, June 8, 1972, Pat. No. 3,808,881. This application May 6, 1974, Ser. No. 467,152
Int. Cl.² B65G 33/00
U.S. Cl. 198—213 1 Claim



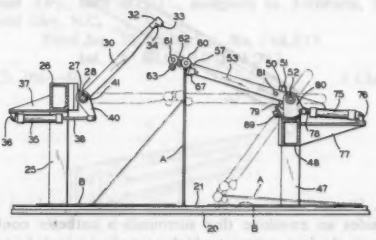
1. Sample feed structure comprising feed auger structure including an elongated, rigid, hollow cylinder, annular, exterior, axially spaced apart recesses in the exterior surface of the rigid cylinder, a plastic sleeve secured on the cylinder for rotation therewith having annular interior portions spaced apart longitudinally thereof extending within the recesses in the cylinder for locking the plastic sleeve on the rigid cylinder against axial movement with respect thereto, and a flexible helical auger fin integral with the plastic sleeve progressing axially of the rigid cylinder and tapered toward the outer periphery of the fin whereby on rotation of the rigid cylinder and the plastic sleeve secured thereto the integral, helical auger fin will be rotated, a rigid trough closely surrounding a portion of the rigid cylinder, plastic sleeve and helical auger fin over approximately 180 degrees of the helical auger fin, and means for rotating the cylinder, plastic sleeve and helical auger fin connected to the rigid cylinder whereby granular material positioned in the trough will be moved along the trough on rotation of the cylinder, sleeve and helical auger fin.

3,967,723

MATERIAL HANDLING APPARATUS

Robert R. Beckham, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 14, 1975, Ser. No. 595,555
Int. Cl.² B65G 47/24
U.S. Cl. 198—235 19 Claims



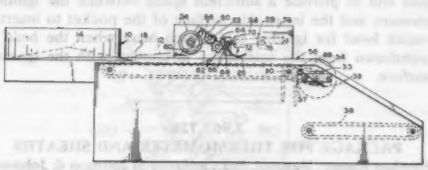
1. A sheet turnover apparatus comprising: a conveyor for supporting and moving horizontally disposed sheets in a horizontal path; means along said path for lifting the leading edge of the sheet upwardly off said conveyor while the trailing edge of said sheet remains in contact and moves with said conveyor to effect pivotal movement of said sheet in an arcuate path about said trailing edge; lowering means along said arcuate path for receiving the lifted edge of said sheet during movement thereof in said arcuate path and subsequently lowering said sheet when advanced past a true vertical onto said conveyor in an inverted position; and power means for disengaging said lifting means from said sheet and quickly moving said lifting means out of said arcuate path allowing said sheet to be supported solely on said lowering means during completion of said movement of said sheet in said arcuate path.

3,967,724

APPARATUS FOR ORIENTING TAPERED ARTICLES

Kenneth M. Allen, and Brian R. Fijalkowski, both of Newberg, Oreg., assignors to Kenneth M. Allen, Newberg, Oreg.

Filed Jan. 14, 1975, Ser. No. 540,802
Int. Cl.² B65G 47/24
U.S. Cl. 198—268 16 Claims



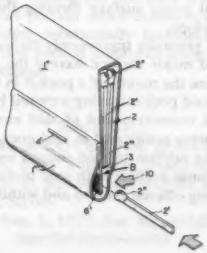
1. In an apparatus for orienting tapered articles,
conveyor means for conveying tapered articles endwise along a predetermined path,
a feeler arm,
means mounting the feeler arm pivotally in the path in a position to be engaged and pivoted by the forward end portion of each article and for pivotal movement out of the path at a predetermined velocity by a small end first article and at a substantially higher velocity when engaged by a butt end first article, and detecting means for differentiating between the higher velocity of movement and the lower velocity of movement of the feeler arm.

3,967,725

MATCH CONTAINER

Dennis R. Thompson, 8 Charles Plaza, Apt. 1803, Baltimore, Md. 21201

Filed Jan. 17, 1975, Ser. No. 541,994
Int. Cl.² A45F 27/00
U.S. Cl. 206—108 1 Claim



1. A match package having a match element and a cover therefor including a match striking element associated with the said cover, said cover being formed from a single strip of flexible, foldable, paper-like material having a flat central back portion to cover one side of the match element and a foldable portion at one end of the cover to cover the outer free ends and opposite side of the match elements, wherein the match elements consist of at least a single sheet having a base portion and a plurality of individual matches extending outwardly from one side of the base having one end of each of the matches attached to the base portion and an ignitible com-

pound in the form of a head carried on the opposite free end of each of said matches, the improvement, which comprises:

a. the opposite end of the cover extending outwardly below the base of the match element and folded to form a pocket outwardly from the bottom of the base portion of the match element, the end of the cover extending outwardly below the base of the match element having a match igniting surface extending across the extreme outer edge thereof and on the same side of the cover as the match element, the outer end of the cover being folded upon itself toward the pocket and of such length as to extend in close proximity of the bottom of the pocket, staple means extending through the folded side of the pocket, the base of the match element and the back portion of the cover to form a single package unit

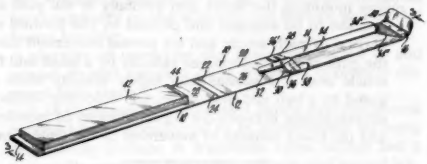
whereby the pocket is movable towards the folded end portion of the cover carrying the igniting surface without moving the said end to provide a sufficient space between the igniting element and the inner side surface of the pocket to insert a match head for igniting said match head when the head is withdrawn from the said space in contact with the igniting surface.

3,967,726

PACKAGE FOR THERMOMETER AND SHEATHS

Stephen Roeser, Dumont, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed June 9, 1975, Ser. No. 585,003
Int. Cl.² B65D *5/50, 85/38*
U.S. Cl. 206—306 **12 Claims**



1. A package for a thermometer and a plurality of disposable sheaths comprising:

a longitudinally extending envelope having a closed and an open transverse end and first and second major surfaces;

said envelope being folded about at least one essentially centrally located transverse fold with said first major surface forming the exterior of said folded envelope and said second major surface forming the interior of said folded envelope;

a die cut, cut generally transversely through that portion of said second major surface having the closed transverse end to define the mouth of a pocket in the interior of the envelope, said pocket having a closed bottom defined by said closed transverse end of said envelope, said thermometer being positioned in said pocket; and

said remaining portion of said second major surface presenting a planar surface with said plurality of disposable sheaths being offered thereto and within the folded envelope.

3,967,727

FASTENER PACKAGE

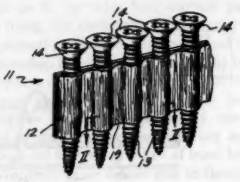
Rudolf Jakesch, Hallstahammar, Sweden, assignor to Bulten-Kanthal Aktiebolag, Sweden

Continuation-in-part of Ser. No. 433,566, Jan. 15, 1974, abandoned. This application Aug. 28, 1974, Ser. No. 501,050
Claims priority, application Sweden, Feb. 7, 1973, 7301678
Int. Cl.² B65D *85/24*
U.S. Cl. 206—344 **4 Claims**

1. A bundle of fasteners, comprising in combination:

a. a series of headed fasteners arranged in substantially parallel relation to each other; and

b. a pair of strips of flexible material disposed at and non-adhesively engaging opposite sides of said fasteners, at least one of said strips comprising material that is yieldable in the direction of its length, said strips being joined together between adjacent fasteners such that such yieldable strip is positively held against said fasteners with a force derived from its having yielded, the marginal portions of said strips adjacent the heads of said fasteners being outwardly flaring flanges to provide guides for the passage of the fastener heads.



2. A bundle of fasteners, comprising in combination:

a. a series of headed fasteners arranged in substantially parallel relation to each other; and

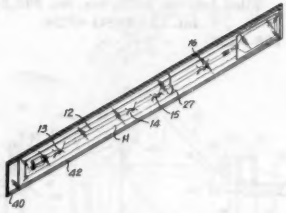
b. a pair of strips of flexible material disposed at and non-adhesively engaging the opposite sides of said fasteners, at least one of said strips comprising crepe paper that is yieldable in the direction of its length, said one strip having a flexible layer of plastics material which follows the inherent surface irregularities of said crepe paper, said strips being joined together between adjacent fasteners such that such yieldable strip is positively held against said fasteners with a force derived from its having yielded.

3,967,728

CATHETER PACKAGE

Robert L. Gordon, Monroe, N.Y., and Burton Salkin, Schaumburg, Ill., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 337,445, March 2, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,755
Int. Cl.² A61B *19/02*
U.S. Cl. 206—364 **13 Claims**



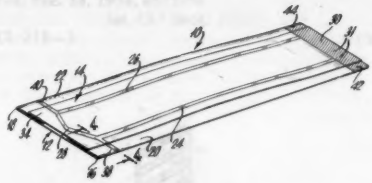
1. In combination with a sterile catheter package which includes an envelope that surrounds a catheter contained therein, the improvement which comprises a sealed pouch of lubricant within said package, said pouch being secured at the end of said package nearest the tip of said catheter, one edge of said pouch being adjacent to the tip of said catheter and transverse to the longitudinal axis of said catheter, the pouch seal adjacent to said one edge being rupturable when said pouch is squeezed, whereby lubricant may be discharged over the tip of said catheter while said catheter is under sterile conditions.

3,967,729

FULLY SEALED PACKAGE FOR STERILE CONTENTS

John Clinton Tanner, II, Hinsdale, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Sept. 29, 1975, Ser. No. 617,903
Int. Cl.² A61B 19/02
U.S. Cl. 206—440 6 Claims



1. In a package for containing a sterile article and comprising:

a bottom sheet having an inner surface and folded side edges folded along longitudinally extending fold lines providing longitudinally extending side flanges;

a top sheet having an inner surface and overlying the inner surface and flanges of said bottom sheet; and

a peripheral seal comprising side seals bonding the sides of the top sheet to the flanges of said bottom sheet and end seals bonding the ends of said top sheet to the ends of the flanges and the ends of the inner surface of the bottom sheet therebetween; the improvement which comprises:

a first adhesive disposed on the inner surface of said bottom sheet in the areas which contact said folded side edges and are under said end seals, said first adhesive being limited within said areas of contact with the area between said flanges and under said end seal being free of said first adhesive;

a thermoplastic adhesive, adhesively incompatible with said first adhesive, overall coating the inner surface of said top sheet;

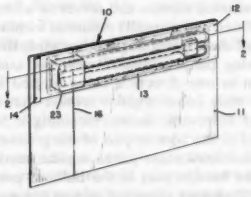
said side seals of said package being affected by heat and pressure applied along the sides of the package and activating said thermoplastic adhesive and said end seals affected by heat and pressure applied along the ends activating both said first adhesive and said thermoplastic adhesive with said thermoplastic adhesive filling any channels existing along said flanges between said bottom sheet and said cover sheet.

3,967,730

CIGARETTE PACKAGE

Frank E. Driscoll, Winston Salem, and Richard S. Wimbish, Mount Airy, both of N.C., assignors to Techform, Inc., Mount Airy, N.C.

Filed Jan. 28, 1975, Ser. No. 544,823
Int. Cl.² B65D 85/10, 85/62
U.S. Cl. 206—461 5 Claims



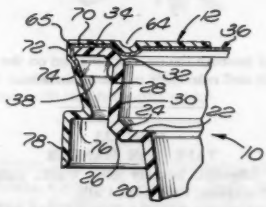
1. A package for elongated elements comprising a planar base support, a clear plastic blister form secured to said base support, said blister form forming an elongated chamber with said base support, closure means openable at one end of said package for exposing elements in said package, said blister reinforcing and spacing means on said package at spaced intervals extending outwardly therefrom to space a plurality of packages and prevent crushing of packaged elements and blister form, said blister form having a perimetrical flange secured to said base support, and a lip on said blister form at one end in juxtaposition to said reinforcing and spacing means to facilitate opening and closing said closure means.

3,967,731

STACKABLE LID AND CONTAINER

Stanley W. Boduch, Ludlow, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Feb. 3, 1975, Ser. No. 546,842
Int. Cl.² B65D 21/04
U.S. Cl. 206—508 7 Claims



1. In combination:

a container having a bottom and integral upwardly and outwardly flared sidewalls merging into a horizontal shoulder, said shoulder having an upwardly and outwardly extending first beveled portion which joins an upwardly extending slightly inwardly inclined annular wall portion; said wall portion merges into an upwardly and outwardly extending second beveled portion connecting a flat horizontal sealing rim defining a top opening; and,

a lid retained on said container over said top opening, said lid comprising a circular planar area having an annular groove concentric with the axis of said lid and radially offset inwardly from the peripheral edge thereof; said edge merging into a rim portion which extends substantially vertically a distance at least equal to the thickness of the container sealing rim and then inwardly to define an inclined wall portion which connects an integral outwardly extending substantially horizontal annular seat portion, said seat portion joining an integral substantially vertical ring flange.

3,967,732

SHIPPING WRAPPER FOR AQUARIUM

Gerald R. Ritzow, 6300 Parkview Road, Greendale, Wis. 53129, and Roger C. Ritzow, 553 W23581 Big Bend Road, Waukesha, Wis. 53186

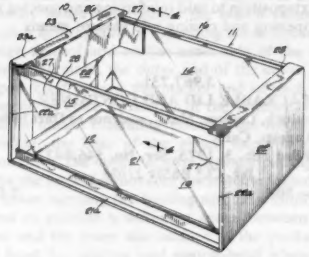
Filed Aug. 1, 1975, Ser. No. 601,061
Int. Cl.² B65D 81/14
U.S. Cl. 206—521 5 Claims

1. A protective wrapper for an aquarium, the aquarium having a bottom, a front wall, a rear wall, and end walls interconnected to form an enclosure, the front, rear, and end walls having an overlapping rim on the top edges, said wrapper comprising:

a. a bottom panel, end wall panels, and end wall rim panels, said panels being hingedly connected along fold lines and positioned generally adjacent corresponding portions of the aquarium,

b. end flaps hingedly connected to said end wall rim panels, said end flaps each having outwardly extending end tabs

with locking edges, said end flaps and end tabs being folded into the aquarium so that said locking edges are



captured beneath the overlapping rim on the top edges of the front and rear walls of the aquarium.

3,967,733

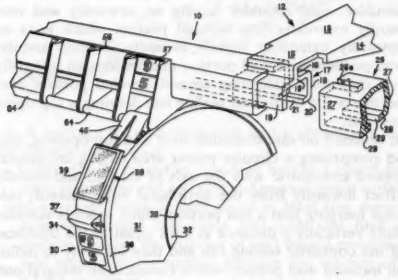
TAPE REEL HANGER

Leonard N. Albrecht, Beverly Hills, Calif., assignor to Tab Products Company, Palo Alto, Calif.

Filed May 8, 1974, Ser. No. 467,863

Int. Cl.[2] A47F 5/08

U.S. Cl. 211—113 **6 Claims**



6. A structure for suspending disc-like reels and the like each provided with a peripheral suspension hook, said structure comprising:

a suspension framework includng a horizontal beam and

a plurality of individual hanger elements suspended from such beam, and movable therealong to any desired position, each said hanger element comprising,

an exposed, forward portion sloping outwardly from the top and having hanger means for receiving a hook on a tape seal to suspend the reel and allow swinging thereof when suspended, said hanger means being located at the bottom of said sloping forward portion, and

a lock member rearwardly of the said forward portion, said lock member being attachable to and removable from said beam and serving, while so attached, to secure the hanger to the beam and to permit horizontal movement of the hanger along the beam to any desired position, and

a rear spring member acting only on the reel suspended by such hanger element to damp swinging movement thereof and to swing the suspended reel forwardly for access in response to a rearward push on the reel.

3,967,734

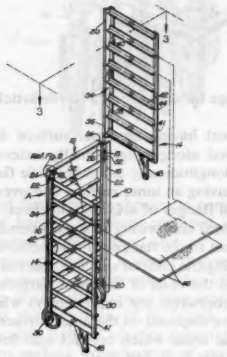
HAND DELIVERY TRUCK

Melvin G. Morgan, Broken Arrow, and Cal L. Dixon, Tulsa, both of Okla., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed July 23, 1974, Ser. No. 491,090

Int. Cl.[2] A47F 5/10

U.S. Cl. 211—199 **2 Claims**



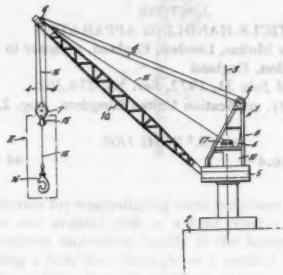
1. A foldable delivery cart of the type described comprising the combination of a main panel and a pair of wing panels, each of the wing panels being hingedly connected to the main panel for at least the major portion of the length of a wing panel and each of the marginal side edges of the main panel comprising an angular light metal extruded section provided with a centrally disposed arcuate groove which extends substantially continuously for the full length of the said angular section and said groove being bounded on one side thereof by a stop element formed integrally with the said angular section, the side edge of a wing panel that is connected to the main panel comprising a light metal Z-shaped extruded section provided with a main flange and adjacent oppositely projecting flange elements for accommodating and receiving shelving supports secured to said Z-shaped section, the inner terminal free end of the said Z-shaped extruded section comprising a bulbous portion that extends substantially the full length of the said Z-shaped extruded section and serves as a hinge pin that is telescopingly fitted and pivotally mounted within the groove of one of the said main panel angular sections, the degree of pivoting of a wing panel provided with the said Z-shaped extruded section in one direction being limited by the stop element on the main panel angular section that is cooperatively associated therewith, means including a further stop element disposed in the bottom part of the groove of the said cooperatively associated main panel angular section and engageable with the bottom part of the bulbous portion of the said wing panel Z-shaped extruded section for anchoring the said bulbous portion of the said wing panel Z-shaped extruded section in the groove of the said cooperatively associated main panel angular section and the wing panel provided with said Z-shaped extruded section to the main panel.

3,967,735

CRANES WITH LOOK INDEPENDENT OF SHEAVE BLOCK

Alexander William Payne, 2, Appleshaw Close, Harestock, Winchester, England

Filed Jan. 28, 1975, Ser. No. 544,793
Claims priority, application United Kingdom, Jan. 28, 1974, 3873/74; Feb. 14, 1974, 6817/74
Int. Cl.² B66C 23/52
U.S. Cl. 212—3 5 Claims



1. In a crane, comprising, in combination:
sheave block means;
primary cable means operatively-connected to said sheave block means;
winch means operatively-connected to said primary cable means for raising and lowering the sheave block means and a load suspended therefrom;
crane hook means for engaging a load to be raised or lowered;
secondary cable means connected directly to said crane hook for raising the crane hook means completely independent relative to said sheave block means;
second winch means operatively-connected to said crane hook means for moving the crane hook means relative to the sheave block means and to a load; and
cooperating means between said sheave block means and said crane hook means for detachably connecting the crane hook means and the sheave block means.

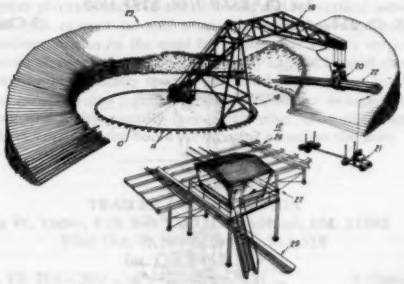
3,967,736

BOOM CONTROL SYSTEM

Iradj Tarassoli, Trussville, Ala., assignor to Bush Manufacturing Company, Trussville, Ala.

Filed Nov. 21, 1974, Ser. No. 525,927
Int. Cl.² B66C 3/00
U.S. Cl. 212—42 7 Claims

1. A boom comprising an arcuate rail; a pivotable structure including an upright support having wheels rotatably supported upon said rail and a truss supported above said rail by said upright support; a grapple suspended from said truss; winch means mounted to said pivotable structure for raising and lowering said grapple; hydraulic circuit means mounted to said pivotable structure for driving said wheels, winch and grapple; electric circuit means for controlling said hydraulic circuit means including a set of solenoid valves mounted on said pivotable structure and a set of solenoid valves actuators mounted off said pivotable structure; and wherein said hydraulic circuit means for driving said winch includes a variable output hydraulic pump, an hydraulic motor mechanically



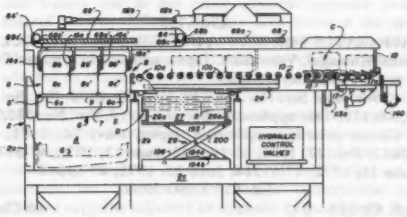
coupled with said winch, and an hydraulic line coupling said hydraulic pump with said hydraulic motor.

3,967,737

DEPALLETIZING AND PALLET STACKING APPARATUS

Roberto S. Peralta, Chicago; Torrance L. Duffy, II, Evanston, and Raymond E. Derflinger, Chicago, all of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.

Filed Aug. 19, 1974, Ser. No. 498,320
Int. Cl.² B65G 59/02
U.S. Cl. 214—1 BB 13 Claims



1. Article shuttle apparatus for moving one article or a row of articles bodily from one point to another, said one article of a row of articles to be moved thereby occupying a variable longitudinal extent due either to a varying number or size of the article or articles involved, said article shuttle apparatus including at least one pair of horizontally spaced clamping members, said horizontally spaced clamping members being respectively attached for bodily movement with a cylinder and a piston rod connected to a piston movable longitudinally within said cylinder, the cylinder being mounted on a horizontally movable frame so it and the clamping member attached thereto are supported for movement as a unit toward and away from the other clamping member, said pair of clamping members having initial relatively widely spaced apart positions located beyond the ends of the longest row of articles to be moved thereby and much closer spaced positions as close together as possible up to a minimum spacing point where less than the maximum number of articles can be clamped therebetween, and operating means for effecting movement of said frame and movement of the piston within said cylinder between an initial position in the cylinder where said clamping members have their maximum spacing and a second position in the cylinder where further movement is limited by the clamping engagement thereof with the article or articles involved.

3,967,738

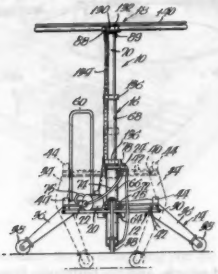
PANEL BOARD LIFT

LeRoy Winings, 208 E. Third St., Harristown, Ill. 62537

Filed Jan. 6, 1975, Ser. No. 538,963

Int. Cl.² B66F 3/18; B25J 3/00

U.S. Cl. 214—1 S 8 Claims



1. A lift for raising panels of material comprising a base, at least three legs pivoted on said base and extending outwardly into a stable supporting position, a telescoping pillar movably mounted through said base and projecting upwardly therefrom, means for supporting said pillar on said base, means for elongating said pillar, a support rack positioned on said pillar and extending transverse to the axis of said pillar, and control means on said support rack for deactivating said elongating means when excessive pressure urges said panels against an obstruction.

3,967,739

APPARATUS FOR SUPPLYING THIN, FLAT ARTICLES

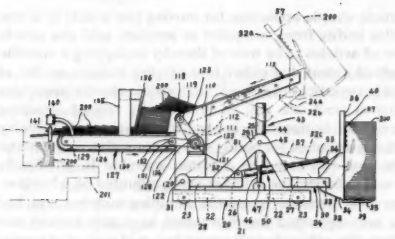
Naoki Kumagai, Yokohama, Japan, assignor to Itogihan Company, Ltd., Tokyo, Japan

Division of Ser. No. 308,820, Nov. 22, 1972, Pat. No. 3,900,115. This application Dec. 13, 1974, Ser. No. 532,700

Claims priority, application Japan, Nov. 24, 1971, 46-93613; Dec. 27, 1971, 46-105242; June 12, 1972, 47-57704; June 21, 1972, 47-61314; June 23, 1972, 47-62312

Int. Cl.² B65G 59/08

U.S. Cl. 214—6 C 10 Claims



1. An apparatus for supplying thin, flat articles comprising:

a reversing means for reversing the direction toward which said articles face while in a piled condition;

conveyers installed parallel to each other for conveying said articles;

said reversing means having at least one bottom surface supporting part for supporting the bottom surface of said piled articles and a plurality of edge supporting parts disposed perpendicular to said bottom surface supporting part for supporting one side edge of each of said articles;

said reversing means being able to lift and rotate said piled articles for the reversal thereof;

said edge supporting parts being able to cooperate with said conveyers in alternate fashion while said articles are being reversed;

said conveyers being able to receive said reversed articles and cooperate with each other for feeding said articles to a subsequent station; and

said edge supporting parts being passable through spaces ajoining said conveyers in an alternate fashion so as to be able to return to an initial position by passing downwardly through said spaces adjacent said conveyers without upward movement through said spaces after the reversal of said articles.

3,967,740

ARTICLE-HANDLING APPARATUS

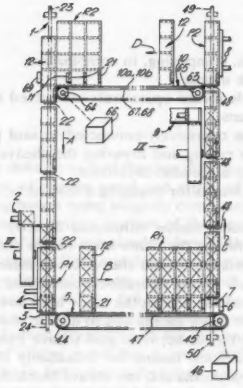
Desmond Walter Molins, London, England, assignor to Molins Limited, London, England

Filed July 31, 1972, Ser. No. 276,302

Claims priority, application United Kingdom, Aug. 2, 1971, 36319/71

Int. Cl.² B65G 1/06

U.S. Cl. 214—16.4 C 44 Claims



1. Apparatus for conveying cigarettes or other rod-like articles including means for feeding a stream of such articles transversely to their lengths; batch-forming means including retaining means for successively forming articles from said stream into batches confined by said retaining means, each batch comprising a stack of the articles; a loading station; means for transferring successive batches of articles from said retaining means into containers at said loading station; an unloading station; means for successively removing batches of articles from said containers at said unloading station; retaining means for receiving and confining batches of articles removed from said containers; and means for conveying away from said unloading station, as a continuous stream, batches of articles received by said retaining means.

3,967,741

DEVICE FOR MOVING FUEL ELEMENTS AND CONTROL BARS FROM ONE PLACE TO ANOTHER PLACE IN A CORE REACTOR

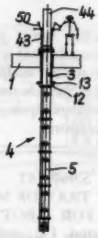
Bernhard Hoffmeister, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Feb. 3, 1975, Ser. No. 546,773

Claims priority, application Germany, Feb. 15, 1974, 2407228

Int. Cl.² G21C *19/10*

U.S. Cl. 214—27 **11 Claims**



1. A device for manipulating work members, especially fuel elements and control rods in a core reactor, comprising; a work platform mountable bodily in the horizontal direction and having a hole therethrough on a vertical axis, a mast on said axis extending through said hole, bearing means supporting said mast on said platform for rotation of the mast on the said axis, said mast having a workpiece gripping mechanism nonrotatably but reciprocably mounted therein, a first latch body nonrotatably but vertically movable on the mast on the outside thereof and above said platform, a second latch body fixed to said platform for cooperation with said first latch body and comprising circumferentially spaced regions which align with said first latch body in predetermined rotated positions of said mast, and bolt actuating means operable for moving said first latch body on said mast to effect positive engagement thereof with a said region of said second latch body in each of said rotated positions of said mast, said bolt actuating means also being operable for moving said first latch body on said mast to effect disengagement thereof from the region enaged thereby to permit rotation of said mast to another rotated position thereof.

3,967,742

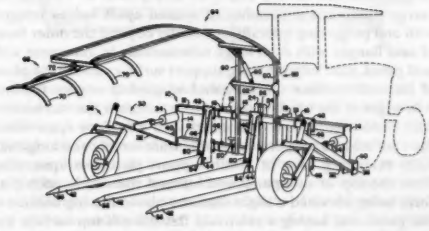
HAY STACK MOVER

Harry Mathais Meinert, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 31, 1975, Ser. No. 545,825

Int. Cl.² B66F *9/12*

U.S. Cl. 214—766 **1 Claim**



1. A load lifting device comprising: an upstanding mast having means thereon for detachably securing said mast to a tractor three-point hitch; a pair of independent lift arms rockably secured to the mast end portions and projecting rearwardly therefrom; lift wheels carried on the arms adjacent their rear ends; an extensible and retractable power means between the mast and each arm for adjusting the latter; a plurality of transversely spaced apart tine members each member pivotally secured at its forward end for vertical movement with respect to said mast and extending rearwardly therefrom; means on the mast for limiting each tine's vertical movement; an elongated boom pivotally carried by said mast, extending in vertically spaced and overlying relation to the tines; power means coupled with said boom for swinging the boom; and a downwardly facing clamping structure articulately mounted on the boom for securing a load on the tines.

3,967,743

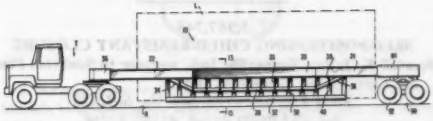
TRAILER CONSTRUCTION

John W. Yoder, P.O. Box 1337, Cumberland, Md. 21502

Filed Oct. 4, 1974, Ser. No. 512,318

Int. Cl.² B60P *3/40*

U.S. Cl. 214—390 **4 Claims**



1. A trailer construction for carrying a load comprising:

a pair of spaced elongated side trusses including an elongated upper beam, a plurality of structural members carried by each truss and depending from the beam thereof, means carried by each truss and connected to the depending members adjacent their lower ends for supporting a load between said trusses, means connecting said trusses one to the other adjacent opposite ends thereof thereby defining an open area between the opposed side trusses and the opposed end connecting means whereby said trusses and said end connecting means are adapted to respectively straddle a load in said open area long the respective opposed sides and ends thereof, means carried by said trailer construction at each of the opposite ends thereof for displacing said trusses toward and away from one another, and means coupled to said connecting means at opposite ends of said trailer construction for connecting the trailer construction to wheeled supports adjacent its opposite ends, wherein the connecting means at one end of said trailer construction includes a guide carried thereby intermediate said trusses, an element carried by each side truss is movable toward and away from one another, and fluid actuated means carried by the trailer construction between said trusses for moving said trusses toward and away from one another, said apparatus including means coupling said elements and said side trusses for vertical movement of said side trusses relative to said elements; means carried by said trailer and cooperable between said side trusses and said element for moving said side trusses relative to said elements.

3,967,744

EXTENSIBLE REACH LOAD LIFTING MECHANISM

Wynand M. J. M. Goyarts, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

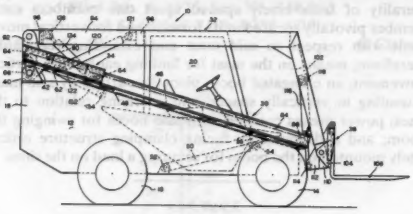
Filed Feb. 18, 1975, Ser. No. 550,894

Int. Cl.² E02F *3/74*

U.S. Cl. 214—770 **19 Claims**

1. An extensible reach load lifting mechanism for a truck or similar vehicle comprising first boom means pivotally connected adjacent one end of the truck and extending longitudinally thereof to a position adjacent the opposite end, first means for elevating the boom means above the truck about

said pivotal connection, trolley means mounted on said boom means for movement longitudinally thereof and of the truck, means for actuating said trolley means longitudinally of said boom means, second boom means pivotally connected at one



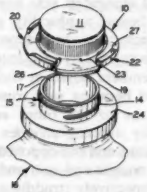
end to said trolley means and extending longitudinally of the first boom means and of the truck, second means for elevating said second boom means above the truck and above said first boom means.

3,967,745

SELF-POSITIONING CHILD-RESISTANT CLOSURE

Randall K. Julian, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Aug. 18, 1975, Ser. No. 605,225
Int. Cl.² B65D *41/34, 41/36, 41/38*
U.S. Cl. 215—216 **15 Claims**



1. A child-resistant closure for the threaded neck of a container, said closure comprising, in combination,

a. an inverted cup-shaped cap having a disc-like top and a depending annular skirt,

b. a thread on the interior of said cap which mates with the thread on the container neck,

c. a tab integrally formed with and at the margin of said skirt,

d. a retaining ring integrally formed with and at the margin of said skirt, said ring being attached to said skirt by frangible elements and having a stop adjacent to and aligned with the trailing edge of said tab, and

e. a shoulder on the container neck adapted to be engaged by said retaining ring when said cap is rotated onto said neck to sealing position,

said ring being fixed to said shoulder and said cap being rotatable in retrograde direction relative to said ring and said container neck only after displacement of said tab to a position removed from alignment with said stop.

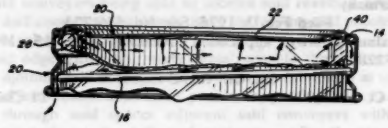
3,967,746

CANNING CLOSURE AND METHOD

Albert L. Botkin, 3018 Hood Ave., Chicago, Ill. 60645

Filed Apr. 28, 1975, Ser. No. 572,160
Int. Cl.² B65D *51/16*
U.S. Cl. 215—260 **12 Claims**

1. A sealed package under vacuum comprising a container having a mouth, an upper circumferential sealing lip and a thread, a one-piece reusable closure sealingly secured to said container, said closure comprising a central cover section terminating outwardly in a depending peripheral flange, said flange providing a thread in threaded engagement with said container thread, an annular gasket bonded to said closure adjacent said flange, said gasket comprising closed-cell foam material resilient at temperatures up to about 250°F. and in sealing engagement with said lip around the entire lip, a portion of said closure central cover section being inwardly dished and being maintained in that inwardly dished configuration by internal vacuum in said sealed package, said central cover portion, when said closure is unscrewed to gain access to the contents of said package, springing preferentially to an outwardly dished configuration.

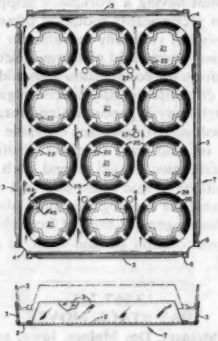


3,967,747

BOTTLE SUPPORT TRAY OF MOISTUREPROOF MATERIAL FOR A BOTTLE CASE

Gary L. Wagner, Covington, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Division of Ser. No. 385,856, Aug. 6, 1973. This application June 9, 1975, Ser. No. 585,031
Int. Cl.² B65D *21/02, 81/16*
U.S. Cl. 217—26.5 **10 Claims**



1. A bottle support tray of integrally molded moistureproof plastic material for providing the bottom of a bottle carrier case, comprising a bottom panel having side edges, upstanding flanges attached to said edges for attachment to walls of the carrier case, and a plurality of spaced apart ledges integral with and projecting laterally outwardly beyond the outer faces of said flanges with each ledge substantially in alinement with said panel, said ledges having support surfaces above the plane of the undersurface of said panel adapted to engage the bottom edges of the carrier case walls to maintain the carrier case wall bottom edges out of contact with a surface upon which the case may be supported, parallel transversely and longitudinally extending rows of bottle support platforms upstanding from the top of said panel and integral therewith; each platform being elevated a slight distance above the top surface of the panel and having a relatively flat smooth top surface and spaced apart recesses projecting inwardly from its edge; the undersurface of said panel having a smooth shallow bottle-top accommodating recess under the elevated portion of said

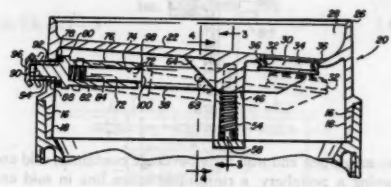
platform, and inwardly projecting projections under said edge recesses.

3,967,748

DRINKING RECEPTACLE VALVE MEANS

Kenneth J. Albert, 7212 Sunset Blvd., Hollywood, Calif. 90046, assignor to Thermo Seal, Los Angeles, Calif.

Continuation-in-part of Ser. No. 583,284, June 3, 1975, abandoned. This application July 11, 1975, Ser. No. 595,110
Int. Cl.² A47G 19/22
U.S. Cl. 220—90.4 22 Claims



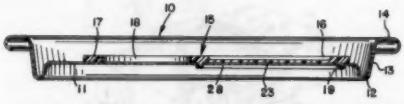
1. In a drinking receptacle valve means; a receptacle cover; said cover having a lip engaging edge; said cup having a drinking opening therein adjacent said edge; a drinking valve member adapted to close said opening; a movable member carrying said valve means; first means cooperable with said movable member and said cover for opening said valve member relative to said drinking opening; a manually operable and reciprocable plunger extending from the exterior to the interior of said cover; said plunger adapted to engage said movable member to force it and said first means to open said valve member relative to said drinking opening; a relief valve operable by said manually operable plunger; said relief valve adapted to relieve steam and fluid pressure from the interior of said cover to atmosphere; and lost motion engaging means disposed between said plunger and said movable means whereby manual movement of said plunger initially operates said relief valve and upon further movement of said plunger said lost motion engaging means opens said drinking valve member after said relief valve has relieved fluid pressure from inside said cover.

3,967,749

EASY OPENING END CLOSURE FOR A CONTAINER AND METHOD OF MAKING THE SAME

John Walter, Evergreen Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 29, 1973, Ser. No. 365,014
Int. Cl.² B65D 41/02
U.S. Cl. 220—265 7 Claims



1. An easy opening end closure for a container, said end closure comprising a metal panel, a slit in said panel, said slit defining a separable closure in said panel, a plastic tab completely overlying said separable closure and including a closure portion seated in said slit, said closure portion including a displaced portion having the appearance of being seated in said slit by the forging and displacement of the plastic material of said tab and said panel has a depending displaced edge in the form of a downwardly depending lip adjacent said slit, said forged plastic underlying both a marginal edge portion of the panel surrounding said separable closure along one side of the slit and the separable closure on the other side of the slit with said forged plastic being interlocked with said displaced edge and resisting outward movement of said separable closure.

3,967,750

EASY-OPEN WALL

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 506,453, Sept. 16, 1974, abandoned. This application July 1, 1975, Ser. No. 592,232
Int. Cl.² B65D 41/32
U.S. Cl. 220—266 20 Claims

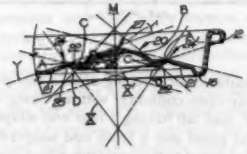
1. An easy-open wall for a container comprising, an approximately U-shaped score line in said wall, said score line having a bight and a pair of extensions extending from said bight and having arcuate end lengths terminating in spaced ends, said spaced ends having a portion of said wall therebetween, said score line defining a panel which is completely severable from said wall while remaining attached at said wall portion to define an opening in said wall, and a tab attached substantially flatly against said wall, said tab having a forward portion which overlies said panel adjacent said arcuate end lengths and having a rear portion, said rear portion being easily grasped and lifted to urge said forward portion against said panel to thereby sever said panel first along said arcuate end lengths and then progressively along said extensions and bight to move said panel within said container with said wall portion holding said panel securely to said wall.

3,967,751

EASY OPEN END

Gordon R. Gane, Pleasanton, and Lawrence C. Hoffmann, Jr., Oakland, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed June 13, 1975, Ser. No. 586,671
Int. Cl.² B65D 41/32
U.S. Cl. 220—268 21 Claims



1. An easy open metal closure member comprised of a main panel encompassed by a rim and at least one reinforcing peripheral rib, a panel stiffening embossment means at least part of which is formed in the panel adjacent the central portion thereof and at least one outwardly projecting button-like depressible tab formed in said panel intermediate a selected portion of the peripheral rib and the stiffening embossment means, said depressible tab being provided with selectively offset concentrically arranged and interconnected primary and secondary base sections and an outwardly projecting dome-like section, said primary base section being generally inclined upwardly and inwardly and said secondary base sec-

tion projecting generally downwardly and inwardly to merge with the wall of the dome-like section and both of said base sections having hoop-like strength characteristics, web means disposed at least in part at an angle to the normal plane of the panel and interconnecting said base sections, said web means being comprised of an embrittled and readily frangible tear line portion that extends for a selected length of said web means and a hinge portion, a selected sector of the tear line portion spaced a predetermined distance from the hinge portion being more work hardened and embrittled than the remaining sectors of the tear line portion, force application indicator means integrated with the structure of the dome-like section and located substantially immediately adjacent the said selected sector of the tear line portion, the frangible tear line portion of the web means and the normal slope of a selected part of the wall of the dome-like section adjacent the wall's point of mergence with the secondary base section when projected along hypothetical lines also forming opposing and intersecting cone-like geometrical figures and said frangible tear line portion being of substantially less thickness than the adjacent base sections whereby when an external and inward force is applied to said dome-like section in the area of said force application indicator means said tear line portion sector will become the focal point of stress concentration and readily fracture to allow the dome-like section of the tab to pivot inwardly about the hinge portion.

3,967,752

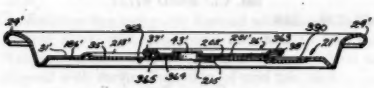
EASY-OPEN WALL

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. Nos. 592,232, July 1, 1975, Ser. No. 529,461, Dec. 4, 1974, abandoned, Ser. No. 519,992, Nov. 1, 1974, Ser. No. 506,453, Sept. 16, 1974, abandoned, Ser. No. 492,033, July 26, 1974, Ser. No. 488,805, July 15, 1974, Ser. No. 378,448, July 12, 1973, abandoned, and Ser. No. 293,115, Sept. 28, 1972, Pat. No. 3,836,038, said Ser. No. 592,232, is a continuation of Ser. No. 506,453, said Ser. No. 529,461, is a continuation-in-part of Ser. No. 519,992, Ser. No. 492,033, Ser. No. 378,448, and Ser. No. 293,115, said Ser. No. 492,033, is a continuation-in-part of Ser. No. 378,448, and Ser. No. 293,115, , said Ser. No. 378,448, is a continuation-in-part of Ser. No. 293,115. This application Nov. 24, 1975, Ser. No. 634,755

Int. Cl.² B65D *41/32*

U.S. Cl. 220—269 **32 Claims**



26. A tab suitable for levering open a tear panel on an end wall of an easy-open container without being detached from the container, said tab having a rear end adapted to be lifted to open a tear panel and a front end adapted to be pressed down on a tear panel and comrising: a first member of a first material extending substantially the length of said tab between its ends and providing rigidity against transverse bending when the tab is used as a lever; a second member of a second material; said first and second members being mechanically joined together by overlap of a marginal portion of said first member around a marginal portion of said second member, said members having other portions thereof which have aligned openings therethrough for receiving a rivet from a container end wall and which are bendable for permitting pivotal movement of said tab about an axis transverse to said length; said first material having greater strength than said second material; and said second material being more capable of being bent back and forth without breaking than first material.

3,967,753

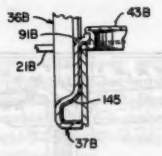
EASY-OPEN WALL

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. Nos. 293,115, Sept. 28, 1972, Pat. No. 3,836,038, and Ser. No. 378,448, July 12, 1973, abandoned. This application July 26, 1974, Ser. No. 492,033

Int. Cl.² B65D *41/32*

U.S. Cl. 220—269 **16 Claims**



1. An easy-open end wall for a beverage container, said end wall having a periphery, a rupturable score line in said end wall defining most of the periphery of a non-removable tear panel while leaving an integral hinge between the panel and the remainder of the end wall, a non-detachable tab, means for attaching said tab to said end wall in a region adjacent to but outside of said tear panel and providing for pivotal movement of said tab about an axis transverse to the length of said tab, said score line including two spaced portions extending from said region away from said tab, said score line extending from said two spaced portions into a generally arcuate section, said tab having a forward, rupturing portion that overlies a minor part of said tear panel adjacent said region and with the greater part of said tear panel being uncovered by and extending away from said tab toward said generally arcuate section, said tab having a rear portion being adapted to be easily grasped and lifted up to urge said forward portion against said panel as the tab is pivoted about said axis to rupture said score line and depress said panel away from said end wall and about its hinge to open position, the initial listing movement of said tab rear portion effecting an initial rupturing of said score line adjacent said tab forward portion and further lifting of said tab rear portion causing propagation of the initial rupturing of the score line away from said tab forward portion and into said generally arcuate section of said score line.

3,967,754

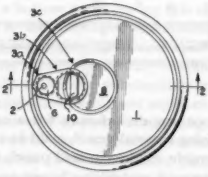
PULL TAB ANTI-ROTATION MOUNTING

Obert M. Ostrem, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 12, 1975, Ser. No. 576,420

Int. Cl.² B65D *41/32*

U.S. Cl. 220—273 **12 Claims**



1. An improved easy-open end closure for a can or similar container, said end closure comprising an end panel, a score line formed in said end panel and defining an opening flap therein, a pull tab rotatably attached to said end panel, anti-rotation abuttment means on said end panel for restraining rotation of said tab, and means for panelwardly biasing said tab to engage said tab with said abuttment means, said tab

being attached to said end panel by a rivet with said rivet being oriented to bias said tab panelwardly, said tab including a finger ring portion, said anti-rotation abuttment means comprising a recess formed in said end panel and said finger ring portion of said tab rests partially within said recess.

3,967,755

PRESENTATION DEVICE WITH A MUSICAL MOVEMENT

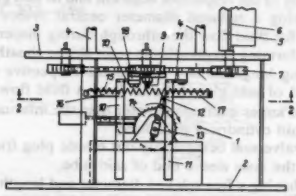
Guido Reuge, 21, rue des Rasses, 1450 Ste Croix, Switzerland

Filed Sept. 9, 1975, Ser. No. 611,603

Claims priority, application Switzerland, Sept. 10, 1974, 12324/74

Int. Cl.² G10F 1/06

U.S. Cl. 221—3 1 Claim



1. A presentation device provided with a musical movement for articles, particularly cigarettes or the like, said device comprising at least one holder for the articles to be presented, said holder being mounted pivotally on a spindle so as to move from a closed position to an open position where the articles to be presented are visible, the pivot-spindle of the holder carrying a pinion engaging with a ring-gear driven by at least one angle-lever mounted on the ring-gear and actuated by a crank fixed to the spindle of the drum of the musical movement, wherein two angle-levers are pivoted on the ring-gear, and a return-spring maintains said levers near to each other while permitting a relative movement therebetween.

3,967,756

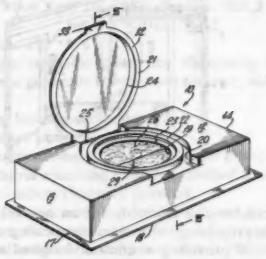
WET WIPE DISPENSER

Robert A. Barish, Trenton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed June 9, 1975, Ser. No. 585,006

Int. Cl.² A47K 10/24

U.S. Cl. 221—45 4 Claims



1. A dispensing container for stacked sheets comprising a single molded element having a top portion, a front wall, a back wall and two opposing end walls, said top portion being substantially planar from the end walls to a lid receiving depression in said top portion, said lid receiving depression extending from said front wall to said back wall, a neck portion extending upwardly from the base of said depression and having a horizontally extending rim located on a plane no higher than the plane of said top portion, a horizontal shoulder extending inwardly from said neck and an aperture defined by the termination of said shoulder, a reclosable lid adapted to fit over said neck portion, the front, back and end walls having an outwardly extending flange at their lower terminal edge, said flange being continuous around the circumference of said container and a liquid impervious bottom element secured to the flange around its entire circumference to form a continuous seal.

3,967,757

ANTI-BURGLARY IRRITANT SPRAYING DEVICE

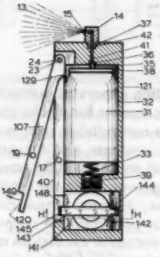
Charles Robert Fegley, 1606 Frush Valley Road, Laureldale, Pa. 19605

Continuation-in-part of Ser. No. 349,300, April 9, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,667

The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.

Int. Cl.² B67B 7/24

U.S. Cl. 222—5 12 Claims



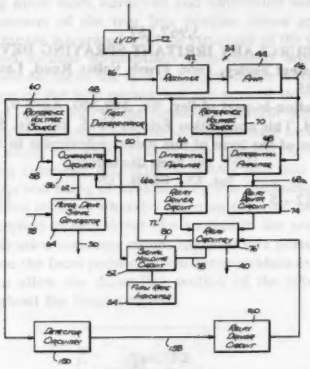
1. A chemical dispensing anti-burglary device for use with a pressurized container, the device comprising: a body member; means for slidably supporting said pressurized container in said body member; a fluid passageway extending through said body member having an entry section at one end thereof and a means for directing fluid discharge from the other end thereof; means for causing the discharge of fluid from said pressurized container into said entry section of said fluid passageway; a spring biasing said pressurized container in said body member and arranged to cause fluid discharge from said pressurized container upon movement of said slidably supported pressurized container when said pressurized container is released; means for releasably retaining said pressurized container in a cocked position; said retaining means including a trigger element; said trigger element being mounted for movement between an actuation position and a release position; said trigger element having a shaped portion for engaging with said pressurized container whereby movement of said spring urged pressurized container will force said trigger element to move to said release position; a trigger holding means mounted for movement between a holding position and a release position; said trigger holding means in said holding position adapted to hold said trigger in said actuation position to retain said pressurized container in said cocked position; said trigger holding means in said release position allowing said spring urged pressurized container to be forced against said entry section, whereby the means for discharging fluid causes discharge.

3,967,758

AUTOMATICALLY CONTROLLED WEIGH FEEDING APPARATUS

Angelo Ferrara, Fairfield, N.J., assignor to Acrison, Inc., Carlstadt, N.J.

Filed Feb. 18, 1975, Ser. No. 550,639
Int. Cl.² G01G 11/14
U.S. Cl. 222—58 8 Claims



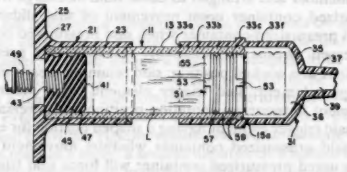
1. A weigh feeding apparatus comprising a container for a prefilled substance, means for discharging the substance from the container at a controllable rate, means for weighing the container and its contents and for producing an electrical signal proportional to the weight, means actuated by said electrical signal for controlling the discharge of the substance from the container, detector cirucit means actuated by said electrical signal for producing an output which is responsive to predetermined excessive excursions of said electrical signal, and means responsive to said output for locking the discharge control means against deviation during the time of said excessive excursion.

3,967,759

SYRINGE ASSEMBLY WITH CONTAINED POP-OUT ELASTIC PLUG SEAL

Brian E. Baldwin, Wilmette, and Edward A. Tischlinger, Plaines, both of Ill., assignors to MPL, Inc., Chicago, Ill.

Division of Ser. No. 197,845, Nov. 11, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 451,910
Int. Cl.² B65D 37/00
U.S. Cl. 222—145 57 Claims



1. A glass tube and non-glass finger grip and nose-forming arrangement for use particularly in packaging and subsequent dispensing of chemicals, comprising

a substantially cylindrical glass tube formed of a length of substantially constant diameter thin-walled glass tubing of substantially constant wall thickness along its length and having a wall thickness substantially smaller than the outer and inner wall diameters of said glass tubing,

a finger-grip sleeve of thermoplastic resin and having a tube-gripping sheath section laterally extending finger-grip protrusion integrally formed thereon,

and a nose-forming sleeve of thermoplastic resin and having a reduced diameter section integral with a tube-gripping sheath section thereof,

said sleeves being frictionally secured in annularly extending stretch-fit along their sheath sections over and along respectively opposite ends of said glass tube,

a piston slidably disposed in sealing relation within and at said end of said glass tube having said finger-grip sleeve thereon,

a valve seal disposed at the opposite nose end of said glass tube,

said reduced diameter section of said nose-forming sheath including a laterally extending wall spaced longitudinally forwardly of the respective adjacent end of said glass tube and having a reduced diameter central orifice formed therein for fluid flow therethrough during dispensing,

said nose-forming thermoplastic resin sleeve sheath section extending longitudinally beyond the respective overlain said end of said glass tube to form a fluid flow by-pass cavity of larger internal diameter than the internal diameter of said cylindrical glass tube,

and said valve seal being a pop-out elastic plug frictionally sealing the nose sleeve end of said tube,

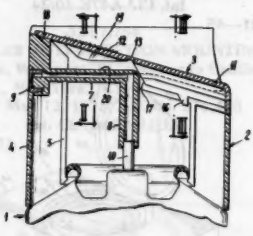
said plug having a free relaxed diameter and length size less than the corresponding diameter and length sizes of said fluid flow by-pass cavity at all corresponding annular and longitudinal points along the length and annular periphery of said plug and said by-pass cavity to enable free plug movement within said by-pass cavity and fluid by-pass flow around the annular periphery of said pop-out valve plug when such plug is longitudinally popped out into said by-pass cavity by forward motion of said plunger.

3,967,760

ACTUATORS FOR PRESSURIZED CONTAINERS

Christian Marcon, Bonneuil, France, assignor to VCA Corporation, Baton Rouge, La.

Filed May 19, 1975, Ser. No. 579,022
Claims priority, application France, May 21, 1974, 74.17565
Int. Cl.² B67D 5/32
U.S. Cl. 222—153 10 Claims



1. An actuator cap assembly for an aerosol can having a valve with a projecting valve stem comprising: a body having an upper wall providing a central, longitudinal slot thereacross, and a skirt portion depending from the upper wall of said body adapted to be mounted on an aerosol can; means on the rear portion of said upper wall adjacent said slot forming a slide; a movable slide member comprising a rear carriage portion mounted in said slot supported and continuously engaged by the slide for linear movement only therealong between a first position and a second position, and a forward button portion hingedly connected to said rear carriage portion at its forward end and movable relative to the carriage, the arrangement being such that when in use on an aerosol can

operation of the valve can be brought about by moving the forward button portion relative to the rear carriage portion when the rear carriage portion is in its first position and operation of the valve by the forward button portion is not possible when the rear carriage portion is in its second position.

3,967,761

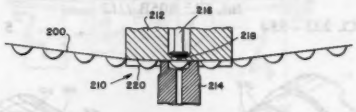
SYSTEM FOR INJECTING PARTICULATE MATERIAL INTO THE COMBUSTION CHAMBER OF A REPETITIVE COMBUSTION COATING APPARATUS

Rosser B. Melton, Jr., Helotes, and Elbert M. Hubbard, Dallas, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Division of Ser. No. 458,884, April 8, 1974, Pat. No. 3,893,578. This application Nov. 4, 1974, Ser. No. 520,670

Int. Cl.² B67D *5/54*

U.S. Cl. 222—194 **7 Claims**



1. A system for injecting predetermined quantities of particulate coating material into a chamber from an elongated tape forming a plurality of discrete tubular capsules each encapsulating a predetermined quantity of particulate coating material, each capsule having an inlet face and an outlet face at opposite ends of the tubular capsule, said system comprising:

means for forming a seal around the tubular capsule to seal the inlet face from the outlet face,

inlet manifold means including valve means for applying a pneumatic pulse to the inlet face, said inlet manifold means being separable from said means for forming a seal around the tubular capsule, and

outlet manifold means including an outlet port communicating with the outlet face of the capsule and the chamber wherein the particulate coating material can be co-mingled with a hot gas to heat and accelerate it against a work piece.

3,967,762

PUMP FOR DISPENSING LIQUID FROM A CONTAINER IN A GENERALLY CONTINUOUS MANNER

Charles S. Machon, Woodbury, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Apr. 16, 1975, Ser. No. 568,515

Int. Cl.² G01F *11/02*

U.S. Cl. 222—321 **6 Claims**

1. A finger operable pump for dispensing liquid from a container in a generally continuous manner, said pump comprising:

1. a pump housing including

a. an inner pump body, and

b. an outer sealing element, said inner pump body having:

i. a liquid receiving chamber divided into primary and secondary chamber portions,

ii. an inlet conduit for enabling liquid to be conducted from the container to said primary chamber portion,

iii. an outer surface formed with a channel and an air dome communicating with said channel and located to confine air as a pressure head above liquid flowing in said channel,

iv. a first lead passage communicating between said primary chamber portion and said channel, and

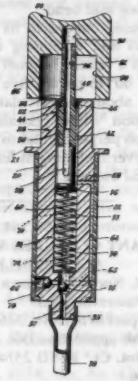
v. a second lead passage communicating between said channel and said secondary chamber portion,

said outer sealing element being dimensioned and shaped to tightly nest about said inner pump body and seal said channel and said air dome,

2. a plunger assembly including,

a. a piston mounted in said liquid receiving chamber for reciprocal pumping movement, said piston dividing said liquid receiving chamber into said primary and secondary chamber portions, and

b. a hollow piston rod mounted on said piston extending out of said pump housing and defining an outlet conduit communicating between atmosphere and said secondary chamber portion, and



3. valve means located to enable said piston to pump liquid from said primary chamber portion through said channel, into said secondary chamber portion to be dispensed through said outlet conduit and to pressurize air in said air dome, and further to enable said air pressurized in said air dome to force liquid through said channel, into said secondary chamber portion to be dispensed through said outlet conduit.

3,967,763

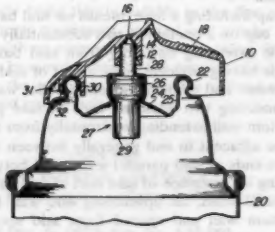
CLIP MOUNTED AEROSOL DISPENSER ACTUATOR

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Continuation of Ser. No. 292,185, Sept. 25, 1972, abandoned, which is a continuation of Ser. No. 86,045, Nov. 2, 1970, abandoned. This application Dec. 20, 1973, Ser. No. 426,515

Int. Cl.² B65D *83/14*

U.S. Cl. 222—402.15 **1 Claim**



1. In a one-piece actuator lever for controlling the dispensing of material from a pressurized container having a top opening closed by a valve mounting cup affixed to the container by a toroidal rolled seam bead of generally circular cross-section, the valve mounting cup including a centrally disposed axially actuable valve with a product outlet passage, the actuator lever being of the type wherein the actuator lever comprises a finger engageable surface at one end of the lever for application of valve actuating force, means on the under-

side of the lever between the two ends for communication with and frictional retention of the valve product passage and a discharge orifice in communication with the valve product passage,

the improvement comprising

an integral resilient fulcrum clip at the other end of the lever from the finger engageable surface for pivotally snap-fitting on the bead, said fulcrum clip being in the form of a downwardly opening channel with a reentrant U-shaped configuration which is narrowed toward the opening by a lip for gripping said bead,

said channel being curved in its length to mate with the toroidal bead and extending circumferentially of said bead through a relatively small sector of arc from about 20° to about 60° to permit free pivotal movement of the fulcrum clip about the circular surface of the bead for valve actuation while restraining the actuator lever against motion perpendicular to the valve actuation axis,

said actuator lever including at least one reinforcement rib to rigidify said channel.

3,967,764

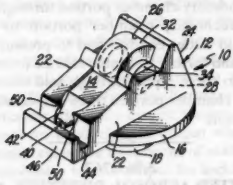
CHILD-RESISTANT CLOSURES WITH LIMITED SPOUT ACCESSIBILITY

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Continuation-in-part of Ser. No. 326,425, Jan. 24, 1973, Pat. No. 3,851,805. This application Dec. 2, 1974, Ser. No. 528,652

Int. Cl.² B65D *25/46, 47/06*

U.S. Cl. 222—536 **1 Claim**



1. A dispensing closure having a cap adapted to be secured to a container so that it is substantially impossible to remove the cap from the container and having a spout rotatably mounted on the cap so as to be capable of being rotated between a closed position in which the spout covers an opening through the cap and an opened position in which the spout is in alignment with the opening in which the improvement comprises:

said cap including a base, means on said base for mounting the cap on a container, two substantially parallel spaced walls extending upwardly from said base, said parallel walls having adjacent ends, a part of said base extending between and connecting said parallel walls, a back wall connecting two adjacent ends of said parallel walls, a bottom wall extending horizontally from said part of said base adjacent to and generally between said other adjacent ends of said parallel walls, said bottom wall constituting an extension of said part of said base between said parallel walls, an upstanding end wall located on said bottom wall and spaced from said second mentioned adjacent ends of said parallel walls.

said spout being rotatably mounted on said cap so as to extend in its closed position between said parallel walls above said part of said base with its tip extending beyond said second mentioned adjacent ends of said parallel walls and above said bottom wall with said tip being spaced from said end wall,

said cap and said spout being shaped so that only said tip of said spout can be engaged to rotate said spout when said spout is in said closed position,

said bottom wall, said end wall, said parallel walls and said spout being dimensioned so that said tip cannot be directly engaged by the digits of the hand of a user so as to rotate said spout from said closed position and being of such dimensions that an implement can be inserted downwardly between said tip and said end wall underneath said tip and manipulated as a lever against said end wall to rotate said spout upwardly from said closed position to a sufficient extent that said spout may be thereafter engaged by the digits of the hand of a user to rotate said spout to said opened position.

3,967,765

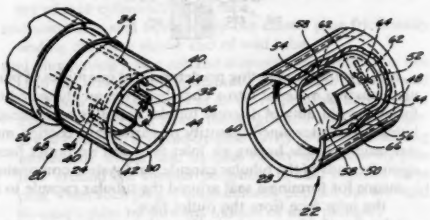
MULTIPLE PURPOSE NOZZLE

Lewis A. Micallef, Fort Lee, N.J., assignor to Leeds and Micallef, Fort Lee, N.J.

Continuation-in-part of Ser. No. 278,997, Aug. 9, 1972, Pat. No. 3,843,030. This application Sept. 30, 1974, Ser. No. 510,580

Int. Cl.² B05B *1/12*

U.S. Cl. 222—554 **5 Claims**



1. A multiple purpose nozzle comprising: a tubular member having a passage means therethrough and through which material to be dispensed is adapted to pass, an adjustable cap associated with the tubular member and adapted to assume a first position at which it seals off the passage means to prevent the material form being dispensed, the cap adapted to assume at least one other position at which the material to be dispensed is adapted to pass in a selected predetermined discharge pattern, the cap including a discharge orifice, surfaces of the tubular member and the cap define a passageway from the passage means to the orifice when the cap is in the other position, the tubular member having an end wall, the cap having an outer flat closed wall having the discharge orifice and a tubular skirt disposed around the end wall, the cap and the tubular member cooperating to form between them a laterally extending portion of said passageway when the cap is in the other position, the passageway including a cavity of predetermined configuration at the other position which cooperates with the orifice in producing the selected discharge pattern, the cap including a hollow boss extending from the flat wall inwardly within and coaxially with the skirt, an axially extending core portion and a surrounding spaced core skirt in the tubular member and positioned to receive the boss therebetween when the cap is coupled with the tubular member, the boss and core skirt having cooperating slots forming part of the passageway communicating with the passage means and the cavity when the cap is in the other position, the boss being adapted to close off the passage means and its communication with the orifice when the cap is in the first position, and coupling means for associating the cap with the tubular member whereby the cap may be shifted between the first and second positions there being at least two other positions angularly spaced with the discharge pattern of one being a spray and the discharge pattern of the other being a stream, the boss, core skirt, and core having slots therein cooperating with recesses in the flat closed wall of the cap upon alignment in a first of said other portions that produces a stream through the discharge orifice and alignment in a second of said other posi-

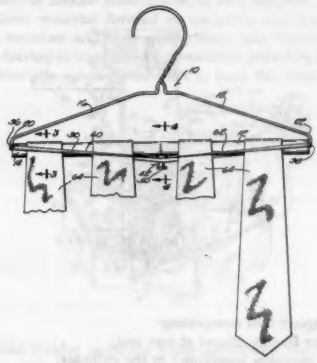
tions that produces a mechanical break-up to provide a spray pattern through the discharge orifice.

3,967,766

TIE ATTACHMENT FOR COAT HANGER

Joseph M. Hart, 5433 W. National Ave., Milwaukee, Wis. 53214

Filed Nov. 13, 1975, Ser. No. 631,763
Int. Cl.² A47J 51/094
U.S. Cl. 223—85 2 Claims



1. In a hanger of the type having a lower supporting run including a paperboard sleeve spanning the run and having upwardly converging runs extending from the lower run, the improvement comprising a continuous elastomeric band having opposed ends and elongated runs with said opposed ends arranged around the juncture of said lower run and converging runs of said hanger and above said sleeve and guide means located intermediate the length of said sleeve and fastened to said sleeve and projecting downwardly therefrom and said band having its elongated runs trained about said guide means with said elongated runs crossing each other on opposite sides of said guide means whereby said elongated runs are engaged under tension with said sleeve at points intermediate the ends of said sleeve and said guide to clamp articles to said sleeve.

3,967,767

DEVICE FOR SEVERING AND FEEDING FLACCID WRAPPING SHEETS

Enzo Seragnoli, Bologna, Italy, assignor to G. D Societa Per Azioni, Italy

Filed Dec. 2, 1974, Ser. No. 528,734
Claims priority, application Italy, Dec. 20, 1973, 3547/73
Int. Cl.² B26F 3/02; B65H 35/10
U.S. Cl. 225—96 6 Claims

1. Apparatus for feeding flaccid sheet material, comprising;

a channel having surfaces disposed to contact surfaces of an elongate strip of flaccid sheet material and to guide said strip toward a zone of utilization, the channel having feed rolls to feed the strip to said zone, the channel surfaces and feed rolls generally defining a plane of travel for the strip and having means in a channel section upstream of said zone for removably impressing longitudinally extending, transversely spaced ribs in the strip to strengthen the flaccid material against curling;

a cutter disposed adjacent said channel, upstream of said channel section, for making transverse perforations in the strip, in synchronism with the feeding of the strip, and for thereby partly defining successive sheets which constitute parts of the strip, but leaving the sheets interconnected at spaced points; and

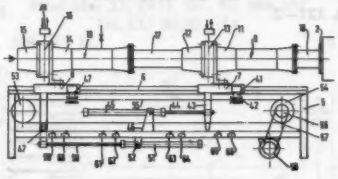
a pair of rolls positioned on opposite sides of said channel and engaging the strip, said pair of rolls having means for tearing the successive sheets from the engaged, perforated strip and for moving them to the zone of utilization while preventing displacement of any detached sheet from the lateral orientation relative to the channel in which the sheet, as part of the perforated strip, was engaged by the pair of rolls.

3,967,768

SEALING DEVICE FOR HOT FLUID CURING UNITS

Augusto Previati, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Jan. 22, 1974, Ser. No. 435,492
Claims priority, application Italy, Jan. 22, 1973, 19414/73
Int. Cl.² B65H 17/36
U.S. Cl. 226—115 6 Claims



1. Sealing device for hot fluid curing units used to cure elongated elements as tubes, structural shapes and the like, which comprises at the inlet and outlet opening of the curing unit at least two coaxial tubular bodies, one of said tubular bodies being secured to any opening of the curing unit and the other tubular body being tightly slidable in the first with an alternative telescopic movement, each of said tubular bodies being provided with an element for tightly locking the elongated element to be cured, whereby the passage of said elongated element in the curing unit takes place without rubbing against part of said curing unit.

3,967,769

TAPE DRIVING ASSEMBLY

Isao Matsumoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1974, Ser. No. 530,801
Claims priority, application Japan, Dec. 22, 1973, 48-1570[U]
Int. Cl.² B65H 17/20
U.S. Cl. 226—194 10 Claims

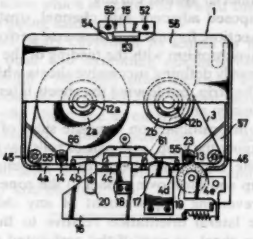
1. A tape driving assembly for a recording tape contained in a cassette and which is transported past a signal reproducing head, comprising:

a. a pinch roller;

b. a capstan mounted adjacent to said pinch roller and operating therewith to transport said tape;

c. a capstan cover partially surrounding said capstan and having a vertical reference surface against which said cassette is receivable so as to provide a position reference;

d. means engageable with said cassette to hold it against said vertical reference so as to accurately position said cassette;



including a horizontal reference surface formed adjacent said capstan cover to form an accurate vertical reference for said cassette; and

wherein said capstan cover has an upper tapered portion for guiding said cassette.

3,967,770

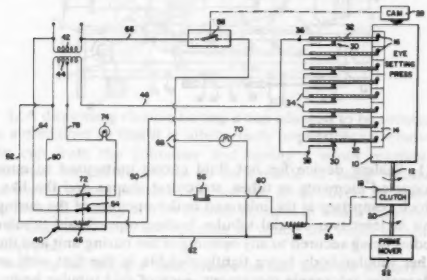
INTERLOCK FOR EYE SETTING MACHINE

Daniel L. Davis, Franklin, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 3, 1975, Ser. No. 592,827

Int. Cl.² B21J *15/28*

U.S. Cl. 227—2 **2 Claims**



1. In a machine for simultaneously setting plural fastener elements into a work piece, said machine having a prime-mover for rotating a drive shaft for the machine, disengageable clutch means between a fastener setting press and said prime mover, said clutch means being disengageable in response to a solenoid, and a cam carried by said press means for indicating the cyclical state of said press means, an interlock for insuring the presence of each of said plural fasteners in said press means comprising: plural normally open feeler switch means positioned for detecting the presence of properly located fasteners in said press means, each of said feeler switch means being connected electrically in a series combination, a relay coil connected between said series combination of switch means and a source of voltage, a normally open micro-switch in following relationship on said cam, configured for closing when said cam indicates a cyclical state of said press just prior to pressing of said fasteners, a normally closed relay contact associated with said relay coil, said solenoid being connected to a source of voltage via the series combination of said relay contact and said microswitch, whereby said relay coil is energized to open said relay contact, preventing disengagement of said clutch means only if each of said feeler switch means detects a fastener at the time of closure of said micro-switch.

3,967,771

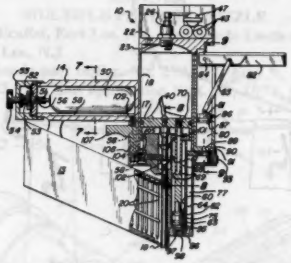
SELF-CONTAINED IMPACT TOOL

James E. Smith, 217 Meadowlook Way, Boulder, Colo. 80302

Filed Dec. 16, 1974, Ser. No. 532,792

Int. Cl.² B25C *1/08*

U.S. Cl. 227—10 **6 Claims**



1. An impact tool comprising:

a cylinder fixedly closed at one end;

a piston movably positioned in the cylinder;

ram means depending from the piston away from the closed end of the cylinder;

ignition means positioned at the closed end of the cylinder;

means operably connected to the piston to inject a combustible gas from a bulk supply into the cylinder above the piston upon movement of the piston towards the closed end of the cylinder,

a compressible medium confined within the tool;

means operatively connected to the piston for compressing the compressible medium upon movement of the piston away from the closed end of the cylinder;

means to releasably secure the piston and ram means against the force exerted by the compressed medium in a position with the piston spaced from the closed end of the cylinder, and;

means to position a nail below the ram means;

whereby, a combustible gas may be ignited by the ignition means to drive the piston and ram means away from the closed end of the cylinder thereby to drive a nail disposed below the ram means and to concurrently compress the compressible medium and engage the means to secure the piston in the spaced position away from the closed end of the cylinder, and thereafter, upon releasing the piston from the securing means, allowing the compressed medium to urge the piston towards the closed end of the cylinder while concurrently injecting the combustible gas into the cylinder above the piston and, when the piston reaches a position adjacent the closed end of the cylinder, again igniting the combustible gas to drive the piston, ram means and nail position under the ram means away from the closed end of the cylinder and again compress the compressible medium.

3,967,772

REUSABLE CONTAINERS FOR CITRUS FRUIT AND THE LIKE

Howard W. Baker, Box 11, Rte. 1, Terra Bella, Calif. 93270

Filed Jan. 22, 1975, Ser. No. 542,951

Int. Cl.² B65D *21/02*

U.S. Cl. 229—18 **11 Claims**

1. A reusable container comprising:

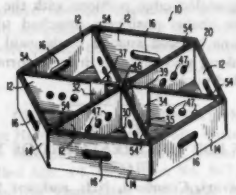
a base member made of a foldable, non-metallic sheet material and having a polygonal central portion with a plurality

of outer side walls joined thereto by fold lines which define the periphery of the base central portion;

a continuous band of foldable, non-metallic sheet material frictionally engaging the outer side walls of said base member in an encircling relationship for maintaining said outer side walls in an upright position and being removable to fold the base member to a flattened condition for return shipment of the empty container after initial use of the container;

said band having a width substantially equal to the height of said side walls whereby the band provides column support at the corners of the container; and

a plurality of divider members made of a foldable, non-metallic sheet material formed as members separate from the base member and from each other, said divider members each having at least three wall sections joined by at least two substantially parallel fold lines to have the form of a triangle, said divider members being positioned inside said container with one wall section located adjacent the inside surface of one of said base member side walls, said divider member one wall section having a length substantially equal to the length of the adjacent container side wall thereby to locate two of said fold lines at corners of said base member and the other two wall sections along diagonal lines, each of said other two wall sections being in a substantially in-line relationship with opposed wall sections belonging to another divider member to provide reinforcement of the container and resist inward movement of side walls at the corners of the base member, said divider members being removable without destruction of the container and foldable to a flattened condition for return shipment of the empty container after initial use of the container;



said base member, band, and divider members providing sufficient reinforcement to enable the container to carry contents weighing more than 150 pounds.

3,967,773

STORAGE METHOD EMPLOYING SEVERABLE WALLED CONTAINER HAVING A CONTINUOUSLY MERGIBLE COVER

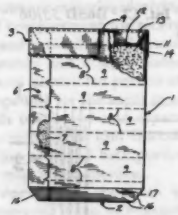
David P. Kaufmann, 6760 N. 54th St., Milwaukee, Wis. 53223

Continuation of Ser. No. 330,998, Feb. 9, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,597

Int. Cl.² B65D 5/54

U.S. Cl. 229—51 DB **4 Claims**

1. In the method of storing a successively removed product from a severable container having a tubular body of a constant cross-section and having a plurality of encircling severable parallel lines defining similar sequentially removable body portions for reducing the depth of the container and defining similar end body portions, the steps providing a removable cover telescoped over one end body portion of said container, said cover having an outer encircling side wall of essentially the same cross-section and slidably telescoping over each of said end body portions formed by removal of a body portion, said replaceable cover having an inner projecting wall portion connected to said outer encircling side wall and projecting inwardly to an inner base wall, said inner projecting wall portion extending into the adjacent end body with said cover side wall projecting over the body portion, the depth of said inner projecting wall portion being less than the depth of the outer encircling side wall, successively removing said product, and replacing said cover over the end body portion as the level within the container is reduced until said inner base wall



abutts the products, and removing a body portion at least when the product is below a severable line to continuously maintain a minimal gap between the base wall of the cover and the product.

3,967,774

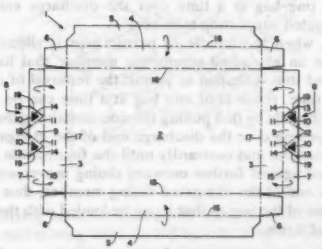
CARTON LID HAVING EASILY OPENABLE, NON-RESEALABLE TAB

William Edward Querner, Springboro, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 23, 1975, Ser. No. 580,378

Int. Cl.² B65D 5/54

U.S. Cl. 229—51 TC **10 Claims**



1. In a carton lid employing a turned under lip along the exposed portions of its periphery to protect the user from injury after initial opening thereof, the improvement comprising an easily openable, non-resealable, pilfer-proof tab for securing said carton lid to the body of the carton, said tab being at least partially formed from the turned under portion of said lip and including a medial tear strip portion defined by a pair of tear lines extending the full depth of said tab, the attached end of said medial tear strip portion having a width substantially equal to that of the line of jointure between said tab and said carton lid, as measured at the attached end of said tab, said tear strip portion having a width less than that of said tab along at least a portion of its length, thereby permitting securement of said tab to said carton body along those portions of said tab outside the medial tear strip portion thereof.

3,967,775

METHOD OF STORING HANDLE BAGS

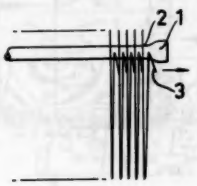
Erik Kramming, Saltsjobaden, Sweden, assignor to Bengt Lundin AB, Arvika, Sweden

Division of Ser. No. 415,854, Nov. 14, 1973. This application June 13, 1975, Ser. No. 586,694

Claims priority, application Sweden, Nov. 24, 1972, 15339/72

Int. Cl.² B65D *33/08*

U.S. Cl. 229—54 R 1 Claim



1. A bundle of plastic bags arranged in a stacked side-by-side relationship

each of the bags in said bundle having a first handle opening located on one side of the bag,

each of the bags in said bundle having a second handle opening located on the side opposite to the side containing said first handle opening,

the first handle opening of each bag being aligned with the first handle opening of every other bag in the bundle,

the second handle opening of each bag being aligned with the second handle opening of every other bag,

the pattern established by the alignment of said first handle openings being disposed at least partially out of alignment with the pattern established by the alignment of said second handle openings,

said bundle of plastic bags being adapted to be slideably supported on an elongated supporting member that has a discharge end that is shaped to control the removal of only one bag at a time over the discharge end of the elongated supporting member,

whereby, when the bundle of plastic bags is slideably supported on an elongated supporting member that has a discharge end that is shaped to permit the removal of only one bag at a time, removal of one bag at a time can be effected from said bundle by first pulling the side containing the second handle opening over the discharge end of the elongated supporting member and outwardly until the first handle opening is inhibited against further outward sliding movement by the discharge end of the elongated sliding member, thus opening the interior of the bag so that it can be loaded with the desired number of items.

3,967,776

CONTINUOUS MULTI-LAYERED PACKAGING ASSEMBLY

Edward W. Getsch, Minneapolis, Minn., and Gale N. Puerner, Fort Atkinson, Wis., assignors to Pako Corporation, Minneapolis, Minn.

Filed Mar. 27, 1975, Ser. No. 562,507

Int. Cl.² B65D *27/10*

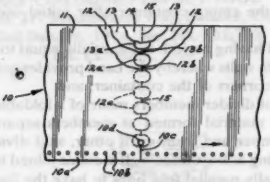
U.S. Cl. 229—69 4 Claims

1. A continuous multi-layer assembly for forming multipocket packages,

a pair of outer cover sheets having spaced apart transverse division lines to define the sides of each individual package,

intermediate sheets interposed between said cover sheets and joined together therewith along only one longitudinal edge and having cut-out seal-through windows respectively underlying said division lines to provide spaced connecting lands and open areas to provide face-to-face contact between the inner surfaces of the cover sheets through said windows,

said inner cover sheet surfaces having means for adhesively sealing said cover sheets together through said windows



between said lands to form individual multi-pocket packages having sealed edge portions with the edges of the intermediate sheets positively attached to said sealed edge portions by said spaced lands, said sheets being severable along said division lines to form each multi-pocket sealed package.

3,967,777

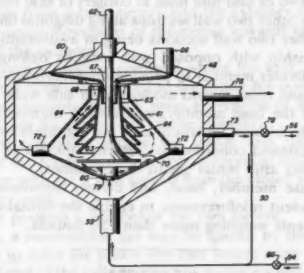
APPARATUS FOR THE TREATMENT OF TAR SAND FROTH

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 395,930, Sept. 10, 1973. This application Nov. 27, 1974, Ser. No. 527,601

Int. Cl.² B04B *1/12, 11/02*

U.S. Cl. 233—3 8 Claims



1. An improved centrifuge comprising:

a stationary centrifuge housing;

a rotor assembly including a rotor housing positioned within said centrifuge housing;

a rotary drive shaft means;

said rotor assembly mounted to said drive shaft means for rotation therewith;

a stack of discs mounted within said rotor housing for rotation with said rotor;

a plurality of nozzles spaced about said rotor housing and communicating between the interior of said rotor and the interior of said centrifuge housings;

means for introducing a feed into said rotor housing;

an annular aperture formed between said disc stack and said rotor housing and communicating between the interior of said rotor housing and the interior of said centrifuge housing;

means positioned within said rotor housing for accelerating said feed to velocities at which relatively higher and lower density components are separated and wherein said higher density components elute from said rotor housing through said spaced nozzles and said lighter density com-

ponent elutes from said rotor housing through said annular aperture;

means for drawing said lighter density material from said centrifuge housing;

means for drawing said higher density material from said centrifuge housing and for reintroducing said higher density material into said centrifuge housing and into said rotor housing;

accelerating means mounted within said rotor housing for rotation therewith for accelerating said reintroduced heavier density components to velocities for eluting said reycled heavier density components from said rotor housing through said apertures;

means for diverting the flow direction and causing said heavier density components which are reintroduced into said rotor to self impact; and

said means for impacting said reintroduced heavier density components comprising a plurality of concave shaped baffles spaced between a plurality of radially extending vanes and adapted for altering the direction of flow of said heavier density components for impact upon itself.

3,967,778

CENTRIFUGAL SEPARATOR

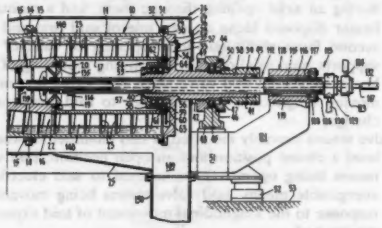
Richard James Hunwick, Wollstonecraft, Australia, assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 14, 1975, Ser. No. 567,523

Claims priority, application Australia, Apr. 23, 1974, 7339/74

Int. Cl.² B04B *1/20*

U.S. Cl. 233—7 **3 Claims**



1. A solid bowl type centrifugal separator adapted to separate sugar juice from a sugar mud slurry feed and which separator comprises an external solid bowl member and means to rotate said bowl about a longitudinal axis, said bowl comprising a longitudinally extending cylindrical wide end portion and a conically constricted end portion extending from one end of said wide end portion such that when in use a bath of the sugar mud feed material will form partially up said conical section forming a beach area up which separated solids are conveyed by conveyor means adapted to collect separated solids from adjacent the inside wall of the bowl and convey them out of said bath and up the beach to an outlet from said bowl for said solids, and means provided at the opposite end of the wide end portion of the bowl to allow substantially solids free sugar liquid to be removed from said bowl,

said conveyor means comprising an elongated hollow rotatable member arranged within said bowl and having a tubular section corresponding in length to said wide end portion of said bowl and having a tapered conical end portion arranged within said conical constricted portion of the bowl with screw conveyor means provided about the periphery of the outer surface of said member for transporting solids from the bath to the beach upon rotation thereof,

a plurality of material receiving compartments provided at spaced preselected intervals along the length of said screw conveyor with said compartments having discharge openings in the surface of said conveyor means for discharging material to said bowl,

a plurality of stationary conduit feed means extending into said rotatable hollow conveyor body and having outlets in open communication selectively with said material receiving compartments,

said material receiving compartments comprising a pair of flocculent treatment material receiving chambers, a main feed material compartment for receiving the sugar mud slurry interposed between said flocculent treatment material compartments and a wash water compartment located within said constricted portion of said conveyor and

said discharge opening for the sugar mud slurry open to the wide end bath portion of said separator bowl with the discharge openings from said flocculent compartments also open to the wide end bath portion at opposite sides of said sugar mud input opening,

said discharge opening for the wash water compartment lying in a transverse plane substantially coincident with the transition zone between the bath and beach sections of said bowl to provide wash water at said transition point.

3,967,779

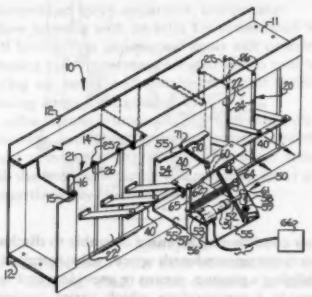
AIR MIXING VALVE HAVING A THERMAL MOTOR ACTUATOR FOR EFFECTING ADJUSTMENT

Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aeronca, Inc., Pineville, N.C.

Continuation-in-part of Ser. No. 438,570, Feb. 1, 1974. This application Sept. 3, 1974, Ser. No. 502,302

Int. Cl.² F24F *13/04*

U.S. Cl. 236—49 **8 Claims**



6. A mixing valve for mixing airstreams in an air distributing system, said mixing valve including a housing having substantially side-by-side first and second air inlet passages therein for receiving respective warm and cool airstreams, valve means comprising first and second groups of louvers pivotally mounted in said housing on spaced parallel axes for pivotal movement in the respective first and second passages, means including an elongate longitudinally movable operating member operatively connected to said first and second groups of louvers, said operating member being movable to and fro longitudinally thereof so as to move one group of louvers toward an open position while moving the other group of louvers toward a closed position and vice versa so as to permit obtaining a desired mixture of the warm and cool airstreams from the mixing valve, and actuator means positioned downstream of and between said first and second air inlet passages and operatively connected to said operating member for imparting longitudinal movement thereto and being responsive to a demand for an increased or decreased temperature of air from the mixing valve for effecting adjustment of the temperature of the air mixture from the mixing valve, said actuator means including a thermal motor of the type comprising a

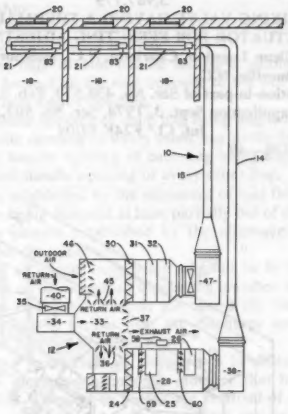
compact sealed hollow casing containing a temperature responsive filler material therein and having an opening in one end of the casing with an axially movable shaft extending therefrom, thermostat means, electrical resistance heating means cooperating with the casing of said thermal motor and with said thermostat means and being responsive to the thermostat means for applying heat to said thermal motor to effect movement to said motor shaft toward an extended axial position, and means cooperating with said thermal motor and operatively connecting the same to said longitudinally movable operating member for imparting a relatively large longitudinal movement thereto in response to a relatively small axial movement of said motor shaft.

3,967,780

AIR CONDITIONING SYSTEM

Darwin G. Traver, DeWitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 311,076, Dec. 1, 1972, Pat. No. 3,867,980.
This application Dec. 9, 1975, Ser. No. 530,577
Int. Cl.² F24F *13/06, 11/04*
U.S. Cl. 236—49 **2 Claims**



1. An air conditioning terminal operable to discharge conditioned air into an enclosed space, said terminal including means defining a plenum, means to provide a first conditioned air stream at a temperature which varies inversely to the temperature of the outdoor air to a first portion of said plenum, and means to provide a second conditioned air stream at a predetermined temperature level to a second portion of the plenum, said terminal further comprising:

a. means to maintain said first air stream in said first portion of said plenum separate from said second air stream in said second portion of said plenum; and

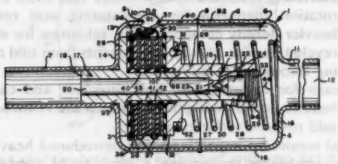
b. discharge means connected to said plenum to discharge the conditioned air into said space, said discharge means including first diffuser means to direct the first conditioned air stream along the ceiling of said space towards the peripheral wall thereof, said first air stream compensating for transmission gains or losses through said wall, and second diffuser means to direct the second conditioned air stream along the ceiling of said space towards the interior portion thereof, said second air stream compensating for the remaining cooling load in said space, the volume of said second air stream being varied in accordance with changes in said cooling load, the volume of said first air stream discharged into said space being maintained substantially constant irrespective of changes in the pressure of said air in said first portion of said plenum.

3,967,781

ELECTRICALLY OPERATED EXPANSION VALVE FOR REFRIGERATION CONTROL

Bernard L. Kunz, Collinsville, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 12, 1975, Ser. No. 549,455
Int. Cl.² G05D *23/24*
U.S. Cl. 236—68 R **12 Claims**



1. An electrically operated valve, comprising:

a shell, said shell defining a chamber having an inlet side and an outlet side;

a valve body mounted in said shell, said valve body having a first end, a second end, and an opening from and between said first and said second ends, said second end having a valve seat formed in it, said valve seat being positioned in said chamber near said outlet side;

electrically energizable means mounted to said valve body, said electrically energizable means including heater means and expansion means responsive to a temperature change in said heater means, said heater means comprising a plurality of ceramic supports, each of said supports having a first face and a second face, said supports also having an axial opening through them, and a resistance heater disposed along at least one of said first and said second faces about said axial opening of each of said supports, said axial opening permitting mounting of said heater means on said valve body, said expansion means moving longitudinally in response to said temperature change;

valve means movably mounted in said chamber between at least a closed position and an open position, said valve means being operatively connected to said electrically energizable means, said valve means being movable in response to the longitudinal movement of said expansion means; and

means for biasing said valve means towards said closed position, said biasing means comprising a spring mounted in said chamber between said valve means and said shell.

6. An electrically operated valve, comprising:

a shell having a longitudinal axis, said shell defining a chamber having an inlet side and an outlet side along said axis;

a valve body having a first end and a second end, said valve body having a central opening therethrough between said first and said second ends, said second end having a valve seat formed in it, said valve body being mounted in said chamber such that said central opening is coincident with said longitudinal axis;

means for generating a temperature change mounted to said valve body, said temperature generating means including a plurality of heater elements, each of said heater elements comprising a support having a first face and a second face, and an electrical resistor device attached to at least one of said faces, said support having a central opening through it for permitting mounting of said heater element to said valve body;

means for sensing a temperature change, said temperature change sensing means comprising a plurality of expandable elements mounted to said valve body, individual ones of said plurality of expandable elements of said temperature change sensing means comprising first and second metal discs having substantially different coefficients of expansion, each of said discs having a central opening through them for permitting mounting of said

discs on said valve body, individual ones of said heater elements and individual ones of said expandable elements being alternately placed on said valve body in abuttment with one another, said expandable elements moving longitudinally in response to changes in temperature;

valve means movably mounted in said chamber for movement between at least a closed position where said valve means abuts said valve seat, and an open position where said valve means is spaced from said valve seat, movement of said valve means being responsive to longitudinal movement of said temperature change sensing means; and

means for biasing said valve means towards its closed position.

3,967,782

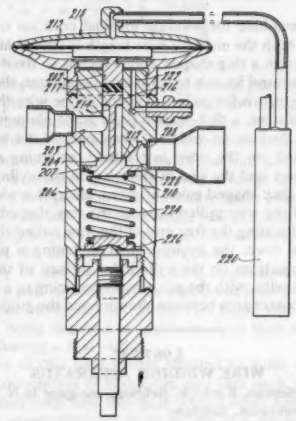
REFRIGERATION EXPANSION VALVE

John T. Eschbaugh, Chesterland, Ohio, and Herbert S. Lindahl, Danville, Ill., assignors to Gulf & Western Metals Forming Company, Southfield, Mich.

Continuation-in-part of Ser. No. 733,946, June 3, 1968, abandoned. This application Mar. 23, 1971, Ser. No. 127,174

Int. Cl.[2] G05D *27/00*

U.S. Cl. 236—92 B 6 Claims



1. A thermostatically controlled expansion valve for use in a refrigeration system comprising an elongated body having an opening extending therethrough from end to end, said opening having intermediate its ends an abrupt change in cross-sectional area defining a shoulder forming a valve seat, and an enlarged outlet chamber at one side of said valve seat, the portion of said opening at the other side of said shoulder forming a cylindrical guide passage of uniform cross-section, and forming a valve orifice at said shoulder whose cross-sectional area is equal to the cross-sectional area of said guide passage, an elongated valve element having a piston-like head movable in said cylindrical guide passage and an enlarged valving portion movable within said chamber to form a variable restriction with said valve seat and adapted to seat against said valve seat to close said orifice, the portion of said valve element intermediate said head and said enlarged valving portion being reduced to define with the surrounding portion of said guide passage an annular inlet chamber, an inlet passage communicating with said inlet chamber, motor means carried at the end of said body containing said guide passage and forming a closure therefor, said motor means comprising a flexible diaphragm operatively mechanically connected to said valve element, a connection for applying pressure to said diaphragm variable with evaporator outlet temperature in a direction tending to open said valve, and a connection for applying pressure to said diaphragm variable with evaporator pressure tending to close said valve, adjustable spring means in said outlet chamber engaging said valve element and urging it in valve closing direction, the high pressure existing within said inlet chamber being substantially balanced as a result of applying a valve closing force to said head and a valve opening force to the portion of the valving portion of said valve element exposed at the valve orifice, said outlet chamber being cylindrical, said valve element including a guide portion engaging the periphery of said outlet chamber.

3,967,783

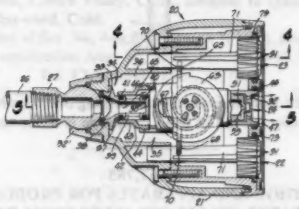
SHOWER SPRAY APPARATUS

Milton Halsted, Long Beach, and Tim M. Uyeda, South San Gabriel, both of Calif., assignors to Chicago Specialty Manufacturing Company, Skokie, Ill.

Filed July 14, 1975, Ser. No. 595,882

Int. Cl.[2] B05B *1/08*

U.S. Cl. 239—102 11 Claims



1. Showerhead spray apparatus, comprising:

a hollow housing with an inlet for pressurized water and a wall having first and second spray exit openings therein;

a pulsating spray generator located within said housing and having an outlet end slidably received within said first housing spray exit opening; and

slide valve means interconnected with said pulsating spray generator and having parts movable therewith for selectively communicating pressurized water from the inlet with the housing interior, the pulsating spray generator or proportionately therebetween.

3,967,784

BEAD DISPENSING GUN FOR MARKING PAVEMENT

Harry C. Ammon, Paul, Idaho, assignor to Idaho Norland Corporation, Paul, Idaho

Filed May 16, 1975, Ser. No. 578,292

Int. Cl.[2] B05B *1/04*

U.S. Cl. 239—583 3 Claims

1. A bead dispensing gun adapted to be mounted upon a vehicle and used in marking pavement comprising:

piston means against which fluid pressure is imposed to selectively displace the piston means;

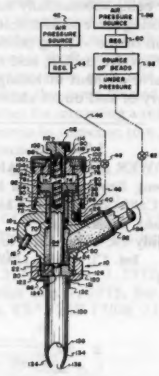
cylinder means within which the piston is caused to reciprocate;

bead accumulation chamber means to which beads are communicated under fluid pressure from a bead source;

valve means associated with the piston means for opening and closing the bead accumulation chamber means to selectively downwardly dispense or accumulate beads, respectively;

hollow dispensing chute means the influent of which is below the bead effluent of the valve means, the hollow of the chute means having a uniform diameter throughout the length thereof, exclusive of the effluent end thereof and being of substantially greater cross-sectional area than that of the valve means effluent, and the effluent end of the chute means being without venturi configuration comprising opposed fingers defining two opposed U-

shaped slots, each finger being downwardly convergently tapered to a tip and the two fingers between said U-



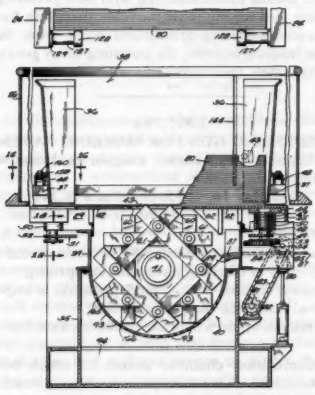
shaped slot downwardly converging one toward the other whereby the fan of bead discharge is determined.

3,967,785

METHOD AND APPARATUS FOR PRODUCING DEFIBRATED CELLULOSE FLUFF FROM BALES OF COMPACTED WOOD PULP SHEETS

George S. Grosch, Lake Worth, Fla., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Feb. 12, 1975, Ser. No. 549,252
Int. Cl.² B02C *13/286*
U.S. Cl. 241—28 17 Claims



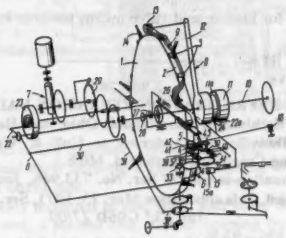
1. A method of producing defibrated cellulose fluff from wood pulp sheets baled in stacks of such sheets and comprising the steps of advancing a face of such a stack against a rotary cutting mill having a curved periphery, rotating the cutting mill on a horizontal axis with a portion of its curved periphery exposed to the face of the stack, and rotating the stack on a vertical axis to move it horizontially and produce relatively motion in the plane of said face between the stack face and the curved periphery of the cutting mill.

3,967,786

MACHINE FOR WINDING SMALL-SIZE TOROIDAL CORES

Leonid Alexandrovich Ivanov, ulitsa Borodulina, 13, kv. 3, Rybinsk, U.S.S.R.

Continuation of Ser. No. 408,427, Oct. 23, 1973, abandoned, which is a continuation of Ser. No. 241,796, April 6, 1972, which is a continuation of Ser. No. 87,399, Nov. 6, 1970, abandoned. This application Apr. 3, 1975, Ser. No. 564,886
Int. Cl.² B65H *81/02*
U.S. Cl. 242—4 R 2 Claims



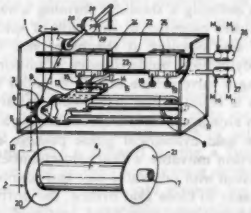
1. In a machine for winding toroidal coils on ring-shaped cores, in which the end of a wire length is passed in a form of a loop through a ring-shaped core which is so fixed as to turn gradually around its axis to form a toroidal core, the machine comprising means for pulling one end of the wire through the ring-shaped core, a disk-shaped fixed guide element having a cylindrical surface on which at least part of the wire length being wound on the core is retained, retaining means for retaining part and the end of the wire on the cylindrical surface of the disk-shaped guide element, means for widening the free end of the wire pulled through the ring-shaped core, and means for locating the free end of the wire pulled through the ring-shaped core, the improvement including a plurality of spaced projections on the cylindrical surface of the disk for guiding the wire, with the projections reducing to a minimum, the total contact area between the wire and the guide element.

3,967,787

WIRE WINDING APPARATUS

Carlos Mulleman, Kortrijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Nov. 5, 1974, Ser. No. 521,032
Int. Cl.² B65H *54/28*
U.S. Cl. 242—25 R 6 Claims



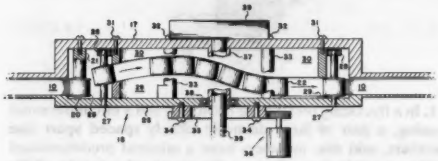
1. In a wire winding apparatus including means for supporting a flanged spool and winding wire thereon, a wire guide arranged to traverse the wire back and forth lengthwise of the spool in use, a first end sensor associated with the flange at one end of said spool and a second end sensor associated with the flange at the other end of said spool, each of said end sensors being operative to automatically reverse the direction of the operation of the guide at the end of each traverse, the

improvement which comprises means for automatically moving each end sensor after each actuation thereof away from the other end sensor by a first distance, means for detecting an accumulation of wire adjacent each flange of the spool, and means for automatically moving the end sensor associated with each of said flanges upon an accumulation being detected adjacent thereto toward the other end sensor by a second distance which is greater than said first distance.

3,967,788
ENDLESS LOOP CASSETTE

Fred C. Ponce, 217 Avenue C, Redondo Beach, Calif. 90277

Division of Ser. No. 461,062, April 15, 1974, which is a continuation-in-part of Ser. No. 191,460, Oct. 21, 1971, abandoned. This application Mar. 27, 1975, Ser. No. 562,620
Int. Cl.² G11B *23/04*
U.S. Cl. 242—55.19 A **12 Claims**



1. In a cassette for an endless loop, wound pack of film, said film being planar with a width dimension at least 10 times its thickness dimension and a length dimension at least 100 times its width dimension, wherein the innermost convolution of film is withdrawn from the center of the film pack, which is rotating in a primary path, traversed through a secondary path, led to a first position outside said primary path, and then fed back to a second position outside said primary path, then onto the periphery of the film pack as the outermost convolution thereof; the improvement, comprising:

a plurality of film pack rollers fixed in position along said primary path and adapted to support at least a portion of the inner circumference of the film pack, said film pack rollers being disposed to approximate at least an arc of a circle having a first radius;

a plurality of film path rollers adapted to guide the innermost convolution of film from said film pack along said secondary path, said film path rollers being fixed in position to approximate at least an arc of a circle having a second radius less than said first radius and being disposed for spiral concentricity with said film pack rollers; and

differential take-up means, for adjusting film tension, in the path of said film at at least one of said first and second positions.

3,967,789
TAPE WINDING SYSTEM

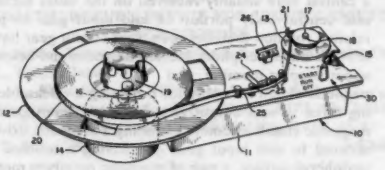
Norman E. H. Deletzke, Jr., P.O. Box 221, Wilmette, Ill. 60091

Filed Oct. 2, 1974, Ser. No. 511,200
Int. Cl.² B65H *19/20*
U.S. Cl. 242—56 R **15 Claims**

1. In a tape winding system having supply means driven by supply driving means, and takeup means driven by takeup driving means said supply driving means and said takeup driving means comprising the sole drive for said supply means and said takeup means, a method for winding a quantity of tape from said supply means to said takeup means, comprising the following steps:

a. forwardly energizing said supply driving means and said takeup driving means causing tape to unwind from said supply means and wind onto said takeup means with minimal tension on said tape; then

b. reducing the energization of said supply driving means causing tape to be pulled from said supply means onto



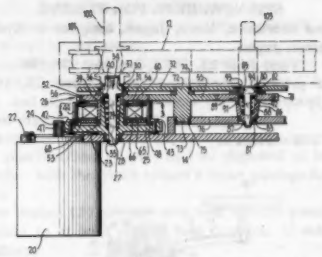
said takeup means; and then

c. stopping said supply means and said takeup means.

3,967,790
CARTRIDGE DRIVE APPARATUS

Ernst P. Hess, Castro Valley, Calif., assignor to Qume Corporation, Hayward, Calif.

Continuation of Ser. No. 448,848, March 7, 1974, abandoned. This application Aug. 14, 1975, Ser. No. 604,758
Int. Cl.² B65H *17/04, 17/18*
U.S. Cl. 242—67.2 **10 Claims**



1. A compact apparatus for driving a cartridge mounted rotatable capstan and take-up reel to enable a ribbon to be transported by said capstan from a cartridge mounted supply reel and snugly accommodated on said take-up reel, said apparatus comprising:

a pair of spaced upper and lower support members;

a drive motor carried by one of said support members and having an output shaft provided with a driving gear;

a capstan drive assembly for providing a direct driving force to said capstan and a releasable driving force to said take-up reel, said capstan drive assembly including:

an input gear having an elongate central body portion rotatably secured at opposite ends thereof to said upper and said lower support members and a toothed periphery engaged with said motor driving gear, said central body portion having a central bore provided with a pair of oppositely disposed slotted walls axially extending from the end of said bore adjacent said upper support member toward the other end of said bore and terminating at an intermediate axial location,

a capstan drive key received within said bore, said key having an upper end and a lower end and a pair of oppositely extending tab portions located at said upper end each slideably received by a different one of said slotted walls to permit axial translation of said key, rotation of said input gear being transmitted to said tab portions of said key by said slotted walls,

means for biasing said key toward said upper support member,

limit stop means secured to said key adjacent the lower end thereof for limiting axial translation of said key in the direction of said upper support member,

an output gear having an elongate central body portion with a central bore slidably received on the outer surface of said central body portion of said input gear to permit relative rotation therebetween, said output gear having a toothed outer periphery located adjacent and below said upper support member, and

a magnetic clutch assembly for providing a releasable driving force to said output gear from said input gear, said magnetic clutch assembly including a magnetic drive ring secured to said input gear and having a toothed inner peripheral surface, a pair of magnetic members mechanically linked to said central body portion of said output gear, each said magnetic member having a toothed outer peripheral surface positioned adjacent said inner peripheral surface of said magnetic drive ring, and a magnet positioned between said pair of magnetic members for providing magnetic flux linking said pair of magnetic members with said magnetic drive ring; and

a reel drive assembly rotatably carried by said support members and driven by said output gear;

said magnetic clutch providing a releasable driving force for said output gear whenever the tension in the ribbon between said capstan and said reel lies below a predetermined threshold value.

3,967,791

SPINNING REEL FOR FISHING

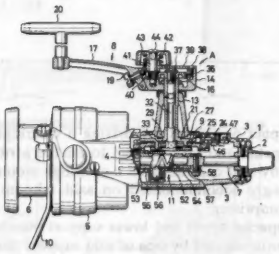
Yasomatsu Morishita, Kure, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Filed June 23, 1975, Ser. No. 589,190

Claims priority, application Japan, June 25, 1974, 49-75078[U]

Int. Cl.² A01K *89/02*

U.S. Cl. 242—84.21 R **8 Claims**



1. A spinning reel for fishing comprising a master gear rotated by a handle, a pinion formed on a tubular shaft to mesh with said master gear, the pinion being arranged to rotate a rotor supported by a reel body, a main shaft carrying a spool at its one end and inserted in said tubular shaft, the main shaft being interlocked with said master gear through a reciprocation mechanism, a tubular handle shaft rotatably supported in said reel body and having at its inner end a plate-like portion carrying an integral extended cylindrical portion, a handle box fixed to the outer end of said tubular handle shaft and connected with a handle, a cover closing an opening of said handle box, said master gear having a central aperture and being rotatably mounted on said cylindrical portion together with washers, a drag washer also mounted on said cylindrical portion so as to be rotatable therewith and also slidable axially and adapted to hold said master gear between it and said plate-like portion, a drag shaft fitted in a central hole of said drag washer so as to be unrotatable and inserted in said tubular handle shaft, a spring washer interposed between a head portion provided at the inner end of said drag shaft and said drag washer, a gear threadedly screwed on the outer end of said drag shaft, a drag pinion shaft rotatably supported in said handle box and through said cover, a drag pinion formed on said pinion shaft and meshed with said gear, and a drag knob fixed to the outer end of said pinion shaft.

3,967,792

FLYCASTING REEL

Edmund V. Goedl, 773 John St., Teaneck, N.J. 07666

Filed Dec. 18, 1974, Ser. No. 533,927

Int. Cl.² A01K *89/00*

U.S. Cl. 242—84.1 R **5 Claims**

1. In a flycasting reel for use upon a fly rod a circumferential housing, a pair of large diameter closely spaced apart disc members, said disc members have a minimal predetermined thickness solely dependent on the structural integrity of the material comprising said disc members, a single common shaft extending between and joining said disc members for enabling simultaneous rotational movement thereof, said shaft being a centrally located axial shaft, only one of said disc members being rotatably mounted in said housing, said other disc member solely being supportably mounted in position on said axial shaft, said housing comprising means for mounting said reel to said fly rod, said fly rod mounting means including an arcuate segmental guide means beneath said other disc member and spaced therefrom for enabling rotatable movement of said other disc member thereabove while providing a vertical stop against vertical deflection of said other disc member, said other disc member comprising handle means for enabling rotational movement of said disc members on said common axial shaft, said axial shaft having a relatively small diameter compared to said disc diameter for enabling take-up and play-out of a slack line therefrom, and said housing further comprising means for selectively enabling free rotatable movement of said disc members to fly cast said slack line.

3,967,793

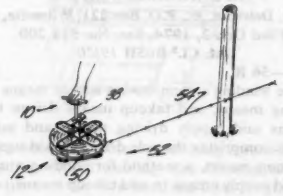
BARBED WIRE SPOOL HOLDER

David O. Walker, Rte. 1, Box 149, Maynard, Ark. 72444

Filed Apr. 21, 1975, Ser. No. 569,966

Int. Cl.² B65H *75/40*

U.S. Cl. 242—96 **7 Claims**



1. A wire spool holder device comprising:

a. means for engaging a spool of wire, the means being freely rotatable about the longitudinal axis thereof, and

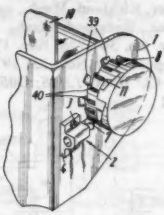
b. means for grasping a spool of wire interconnected to the means for engaging, the means for grasping being freely rotatable about the longitudinal axis thereof.

3,967,794

DEVICE FOR INITIATING THE BLOCKING OF A REEL SHAFT FOR A SAFETY BELT WINDING-UP AUTOMAT

Artur Fohl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Filed Jan. 20, 1975, Ser. No. 542,382
Claims priority, application Germany, Jan. 21, 1974, 2402748
Int. Cl.² A62B *35/00*
U.S. Cl. 242—107.4 R 12 Claims



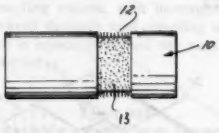
1. In combination with a device for initiating the blocking of the reel shaft in a safety belt mechanism, said device including inertia responsive means including a disc mounted on the reel shaft, said disc being rotatable relative to the shaft in response to acceleration of said shaft in the paying out direction, and magnet means adjacent said disc and magnetically coupled thereto for imparting a retarding force on said disc exclusively upon at least a small, peripheral segment thereof and thereby enhancing the response of said disc to acceleration of said shaft, said magnet means being an electromagnet stationarily mounted near the periphery of said disc, said disc comprising a plurality of circumferentially distributed elements in the peripheral region of the disc, said disc and said elements forming a unitary structure.

3,967,795

BOBBIN TUBE

Noboru Shindo, and Mistuhiko Miyaoka, both of Kyoto, Japan, assignors to Murata Machinery Ltd., Tokyo, Japan

Filed Feb. 4, 1974, Ser. No. 438,510
Claims priority, application Japan, Feb. 8, 1973, 48-16244
Int. Cl.² B65H *75/28*
U.S. Cl. 242—125.1 5 Claims



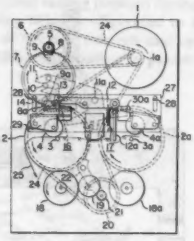
1. A bobbin tube, particularly for use with filament winding apparatus having automatic bobbin change mechanism, comprising a tubular body having a smooth cylindrical surface and being provided in said surface with a shallow depression extending in circumferential direction at least partly about the circumference of the tubular body within the traversing range of a filament to be wound in form of a yarn package on said tubular body; and resilient tentacular filament engaging means of synthetic plastic material extending in radial direction in said depression with outer ends thereof substantially flush with said cylindrical surface of said tubular body for engaging and capturing a filament moving over said engaging means.

3,967,796

AUTOMATIC RETURN DEVICE FOR USE IN CASSETTE TAPE RECORDER

Kyohei Naito, Tokyo, Japan, assignor to Shinwa Shoko Co., Ltd., Tokyo, Japan

Filed Sept. 19, 1974, Ser. No. 507,589
Claims priority, application Japan, Oct. 2, 1973, 48-110839
Int. Cl.² B65H *59/38, 63/02;* G03B *1/04;* G11B *15/32*
U.S. Cl. 242—189 1 Claim



1. In a cassette type tape recorder, an automatic tape return arrangement, comprising in combination:

a. a chassis panel with chassis support means (28) towards the center of said panel;

b. pivoted frame means (29, 29*a*) with inner end sections (30, 30A) supported on said support means (28);

c. first and second pinch rollers (4, 4*a*) pivoted to said frame means (29, 29*a*);

d. first and second capstans (3, 3*a*) disposed to contact with said pinch rollers (4, 4*a*) and so disposed as to define together with the pinch rollers a loose passage for a tape (25);

e. drive means (1) towards one side of said panel center coupled to at least one of said capstans to rotate said capstan;

f. a first gear (5) also towards said one side of said panel center likewise driven by said drive means (1);

g. a second gear (7) having opposed circumferential notches (8, 8*a*) to receive said first gear (5) but in drive contact with said first gear (5) when said first gear (5) is not in one of said notches, said second gear having outer pins (9, 9*a*);

h. an eccentric pin (10) on said second gear (7), a reverse lever (11) with one end engaged to said eccentric pin (10) and the other end defining actuating parts (31, 31*a*) engaging the end sections (30, 30*a*) so as to bring the first or the second pinch roller (4, 4*a*) into engagement with the first or second capstan (3, 3*a*), said reverse lever (11) having a fulcrum (11*a*) and an engaging part between said actuating parts;

i. a sensing lever (12) with a sensing part (12*a*), so disposed with respect to said tape defined passage as to be in contact with said tape (25) when said tape is tensioned, said sensing lever (12) having a fulcrum (15) and one coupling end, a lock lever (14) with a fulcrum (14*a*) coupled to said coupling end, said lock lever being disposed to engage one of said outer pins (9, 9*a*); and,

j. first and second reel tables (18, 18*a*) on the other side of said panel center, a roller arm (22) disposed pivotally on a pivot pin (32) between said reel tables (18, 18*a*) said roller arm (22) having an inner end towards said panel center, a center part, and an outer end, a roll-up pulley (20) driven by said drive means (1) on said outer end with a roll-up roller (21) coaxially connected thereto, a contact roller (19) on said roller arm center part, and an arm extension (23) extending from said roller arm inner

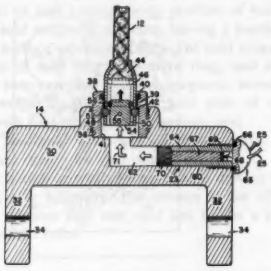
end towards said panel center into said reverse lever engaging part.

3,967,797

ELECTRICALLY ACTIVATED PENDANT RELEASE MECHANISM

Gene R. Drew, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 8, 1975, Ser. No. 539,472
Int. Cl.² B64D 17/30
U.S. Cl. 244—151 B 1 Claim



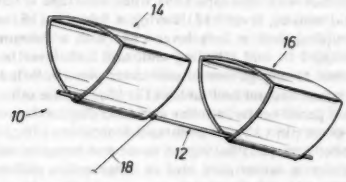
1. A release mechanism for connecting an extraction rocket pendant to a parachute harness comprising:
- a connector fitting adapted to be attached to a parachute harness;
- separable means for connecting the pendant to the connector, a manual actuating means,
- a thermal battery operably connected to the manual means for generating an electrical current,
- a pyrotechnic device mounted in the connector responsive to said electrical current for producing explosively a fluid pressure;
- said battery being connected to the pyrotechnic device by electrical conductors;
- said pyrotechnic device having means for delaying for a predetermined period of time the initiation of said fluid pressure,
- said separable means being responsive to the fluid pressure to release the pendant.

3,967,798

BOX-LIKE KITE

Julius M. Christoffel, Jr., Houston, Tex., assignor to Gayla Industries, Inc., Houston, Tex.

Continuation of Ser. No. 389,867, Aug. 20, 1973, abandoned.
This application Apr. 3, 1975, Ser. No. 564,830
Int. Cl.² B64C 31/06
U.S. Cl. 244—153 R 14 Claims



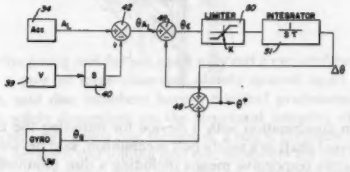
1. A box-like kite comprising:
- a single strut-like member,
- a plurality of hollow, open-ended box-like airfoil members having a single, continuous side wall extending longitudinally along the strut-like member, and
- means separately and independently pivotally connecting each airfoil member to the strut-like member, said connecting means being formed by the side wall being adjacent to the strut-like member and a member cooperating with the side wall and the strut-like member to pivotally attach the airfoil member to the strut-like member in spaced apart relation whereby each airfoil member may freely move about its pivot and rotate relative to the other airfoil member to stabilize the flight of the kite.

3,967,799

HEAD UP DISPLAY AND PITCH GENERATOR

Hans Rudolf Muller, Kirkland, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Division of Ser. No. 307,726, Nov. 17, 1972, Pat. No. 3,851,303. This application Nov. 25, 1974, Ser. No. 527,044
Int. Cl.² B64C 13/18; G05D 1/08
U.S. Cl. 244—181 16 Claims



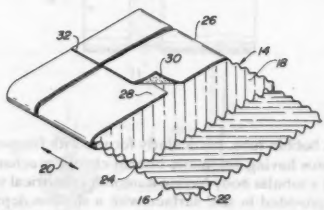
1. A pitch signal generator for an aircraft, comprising:
- a source of gyroscope based aircraft pitch signal;
- a source of inertial based aircraft pitch signal;
- means for combining the gyroscope based pitch signal with a pitch correction signal to produce a generated pitch signal;
- means for subtracting the generated pitch signal from the inertial based pitch signal to produce a pitch error signal; and
- means responsive to said pitch error signal to generate said pitch correction signal.

3,967,800

CLOTH-BOARD REEL

Morris Firstenberg, 225 Cherry Lane, River Edge, N.J. 07661; Daniel Chestnut, 274 Rutledge Ave., East Orange, N.J. 07017, and Edward Marshall, 147 President St., Passaic, N.J. 07055

Filed Nov. 10, 1975, Ser. No. 630,396
Int. Cl.² B65H 75/06
U.S. Cl. 242—222 5 Claims



1. A cloth-board reel fabricated from flexible sheet material, comprising:
- a first longitudinally extending stiffener sheet, said first stiffener sheet having corrugations extending obliquely

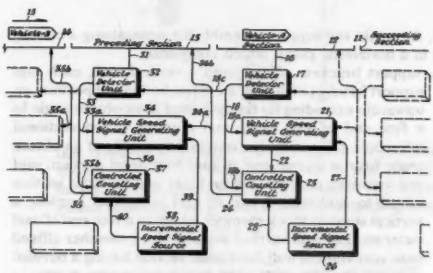
with respect to the longitudinal dimension of said stiffener sheet, a second longitudinally extending stiffener sheet generally congruent with and adhesively secured to said corrugations of said first stiffener sheet, said second stiffener sheet having corrugations extending obliquely with respect to the longitudinal dimension of said second stiffener sheet and transversely of said first stiffener sheet corrugations, and a wrapper sheet extending circumferentially about said first and second stiffener sheets and adhesively secured to the corrugations of said stiffener sheets.

3,967,801

SIGNAL SYSTEM FOR HIGH SPEED TRAINS

George W. Baughman, The Cloisters, Apt. 517, 106 Interlachen Ave., Winter Park, Fla. 32789

Filed Sept. 26, 1974, Ser. No. 509,476
Int. Cl.² B61L *21/10*
U.S. Cl. 246—34 R **20 Claims**



1. A signal system for vehicles traveling along a predetermined way, said system having at least two consecutive sections and a vehicle to be controlled by a vehicle speed control signal received during travel through each section, each section including,

a. vehicle detector means to detect a vehicle in said section electrically connected to a next preceding vehicle detector means,

b. a coupling means controlled by said vehicle detector means,

c. a vehicle speed signal generating means controllably coupled by said vehicle detector means through said coupling means respectively to a next preceding section and to a vehicle speed signal generating means of a next preceding section to deliver a vehicle speed control signal to said preceding section, when the section is unoccupied and the next succeeding section is occupied,

d. an incremental speed signal source providing respectively a signal to said vehicle speed signal generating means and to said coupling means, said incremental speed signal being delivered through said coupling means only when said section is unoccupied and the next succeeding section is occupied.

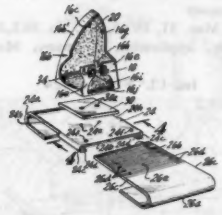
3,967,802

SAFETY STAND FOR IRONS

Marcel Lomagno, 26-20 E. 13th St., Brooklyn, N.Y. 11218

Filed Sept. 4, 1974, Ser. No. 502,919
Int. Cl.² D06F *79/00*
U.S. Cl. 248—117.4 **17 Claims**

1. A safety stand for an iron, wherein the iron has heated portions and a handle, comprising a substantially closed housing for receiving the iron and covering the heated portions thereof, said housing having an opening therein said housing having an inclined rear wall having tapering edges to form an apex at the top thereof, a pair of sidewalls, each side wall having a rearwardly disposed wall portion which extends along the entire length of the edges of said rear wall to said apex, and a frontwardly disposed wall portion which extends only partially towards said apex, a front wall which extends upwardly to the same extent as said frontwardly disposed wall portions, the major portion of said opening being formed by the upper edges of said front wall and said frontwardly disposed wall portions and the front edges of said rearwardly disposed wall portions, said opening being dimensioned to permit insertion into and removal of the iron from said housing, said opening further comprising a passageway in said front wall dimensioned to correspond to the transverse dimensions of the handle, whereby the body of the iron may be found through said major portion of said opening and the handle may be moved through said passageway to position the iron within said housing in a normal resting position during periods of iron non-use, said housing being configurated to at least partially expose the handle of the iron through said opening when the iron is disposed within said housing to permit gripping of the



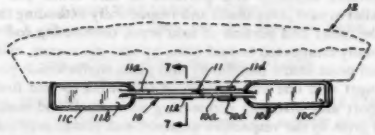
handle for movement of the iron into and out of said housing; mounting means for securely fixing said housing to a support surface; and locking means provided on said front wall for engaging the handle when the iron is disposed within said housing and preventing the iron from moving out of said housing during periods of non-use of the iron, said locking means comprising a latch having a bolt mounted for axial movement on said front wall to one side of said passageway, and keeper means fixedly mounted on said front wall to the other side of said passageway, said bolt being movable to an engaging condition with said keeper means between the handle and the body of the iron, whereby said bolt retains the iron within said housing in the keeper means engaging condition, whereby the heated portions of the iron are maintained concealed in all positions and orientations which said housing may assume; and whereby the iron is safely maintained on a desired support surface and has the heated portions thereof during periods of non-use.

3,967,803

COLLAPSIBLE TRIVET

Loren C. Kienlen, and Jack H. Poppler, both of Nisswa, Minn., assignors to Doormaid, Inc., Nisswa, Minn.

Filed Aug. 30, 1974, Ser. No. 502,075
Int. Cl.² A47G *23/00*
U.S. Cl. 248—152 **6 Claims**



1. A collapsible trivet comprising

a pair of elongated integrally molded plastic arms,

each arm having a generally flat horizontally oriented inner connector section and a pair of outwardly disposed vertically oriented spacer blades extending above and below said sections on the respective end portions of the con-

nector section, said outwardly disposed blades each having front and rear surface

the generally flat horizontally orientd inner connector sections being pivotally connected to permit the front surfaces of the outwardly disposed blades to be collapsed into face to face relationship for compact storage,

the extreme end portions of each of said inner connector sections extending outwardly beyond the inner portions of the ends of the rear surface of the respective blades to provide a positive overlapped connection therebetween while still permitting collapsing of the arms with the blades in face to face relation.

3,967,804

FRAME STRUCTURE FOR FURNITURE, ESPECIALLY TABLE FRAME STRUCTURE

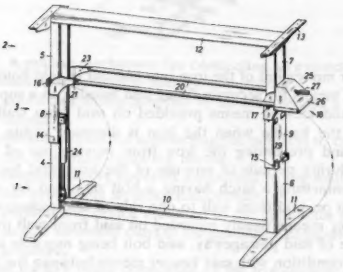
Karl Kneile, Holzmaden, Teck, Germany, assignor to Robert Krause KG Zweiniederlassung Weilheim/Teck, Weilheim an der Teck, Germany

Filed Mar. 31, 1975, Ser. No. 563,364

Claims priority, application Germany, Mar. 30, 1974, 2415572

Int. Cl.² F16M *11/24*

U.S. Cl. 248—188.2 **23 Claims**



1. A frame structure for furniture, especially table frame structure, which includes: a first rigid support structure, a pivotal support structure supported by and pivotally connected to said first rigid support structure for selective movement along a vertical plane from a first position of use in which it forms an upwardly directed extension of said first rigid support structure to a second position of use in which it is folded downwardly at least approximately onto said first rigid support structure, and vice versa, a second rigid support structure pivotally supported by and extending upwardly from said pivotal support structure while forming with the latter a parallelogram linkage system, said pivotal support structure including pivotal arms and pivot shafts pivotally connecting upper end portions of said first rigid support structure to the respective adjacent end portions of said arms, pin means parallel to said pivot shafts and respectively extending through to the other end portion of said arms, connecting rod means pivotally connected to said arms by said pin means, and additional pivot shafts parallel to said pivot shafts which pivotally connect said one end portion of said arms to said first rigid support and pivotally connecting said other end portion of said arms to the respective adjacent end portions of said second rigid support structure, said pin means being offset relative to the respective adjacent additional pivot shaft in the pivoting direction of said pivotal support structure from said first position of use to said second position of use, and in said first position of use of said pivotal support structure, said connecting rod means being located at a level higher than said additional pivot shafts.

3,967,805

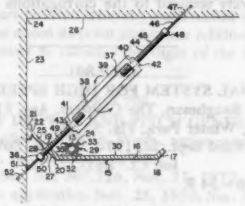
CURTAIN ROD SUPPORT ASSEMBLY

Robert Hoffman, Chicago, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 12, 1975, Ser. No. 557,770

Int. Cl.² A47H *1/10, 5/14*

U.S. Cl. 248—262 **3 Claims**



1. A curtain rod support assembly for maintaining a curtain rod in a horizontal plane, which comprises:

a. support brackets affixed onto a vertical wall, each said support bracket including a central horizontal portion, an upwardly extending lip flange joined at an obtuse angle to a first end of said horizontal portion, a two sectional telescopic rod assembly extending upwardly at an obtuse angle from a second end of said horizontal portion, said rod assembly consisting of an inner and an outer section joined to said second end of said horizontal portion, a vertical support block member joined to a free end of said outer section, said vertical support block member affixed onto said vertical wall, said inner section having a beveled opening therethrough, said beveled opening having a threaded interior surface;

b. an anchoring device communicating with each support bracket as well as said vertical wall and a ceiling; and

c. each end of said curtain rod communicating with one said support bracket.

3,967,806

ADJUSTABLE APPARATUS FOR SUPPORTING CONCRETE FORMWORK

James K. Strickland; Frank J. Hessel, and James W. Cote, all of Jacksonville, Fla., assignors to Strickland Systems Inc., Jacksonville, Fla.

Filed Mar. 17, 1975, Ser. No. 558,648

Int. Cl.² A47F *5/10*; A47H *33/00*

U.S. Cl. 248—287 **12 Claims**

1. Apparatus for supporting concrete formwork used in construction of multi-story concrete buildings, said apparatus comprising in combination:

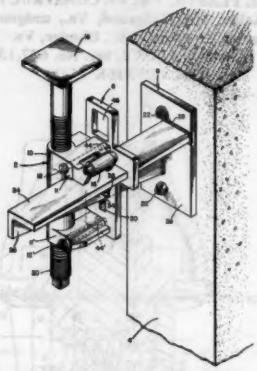
a formwork shoring bracket having a vertically adjustable supporting surface for supporting vertical loads, and

attaching means for attaching said shoring bracket to a column in said building, said attaching means comprising

a support comprising a base and an arm extending outwardly from said base, said base being attachable to said supporting column and said arm having at least one generally upwardly facing planar surface and one generally horizontally outwardly facing planar surface, and

adjustable mounting means received on said outwardly extending arm, said adjustable mounting means comprising a generally planar member affixed to said shoring bracket and having an aperture therethrough receiving said outwardly extending arm, said member having upper and lower portions and a pair of side portions integral therewith and surrounding said aperture, said aperture generally conforming to the configuration of said outwardly extending arm such that said member matingly engages both said generally upwardly

facing planar surface and said generally horizontally outwardly facing side portion surface to support said member against any substantial movement in any direc-



tion transversely of said arm and against any rotation about said arm, said mounting means further including means for releasably holding said member at predetermined positions along said outwardly extending arm.

3,967,807

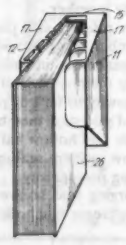
SELF-CLOSING BOOK HOLDER AND SUPPORT

H. Hugh Claxton, Lachine, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Sept. 8, 1975, Ser. No. 611,070

Int. Cl.² A47B *97/04*

U.S. Cl. 248—447 **2 Claims**



1. A self-closing book holder and support comprising:

a back portion including a rear surface for positioning against and attachment to a support structure;

two spaced apart wings extending forwardly from each side of said back portion; and

hinge means at a top part of said back portion between said wings for hinged attachment of a book at its top back edge to said back portion;

each wing including a side surface and a top surface, said top surface extending laterally inward from said side surface and also extending forward and downward from said back portion, and a plurality of vertical webs extending inwardly from said side surface and having inner edges, said inner edges at a top end of each web extending in an arcuate form upward and outward to an inner edge of said top surface;

said webs of one wing extending towards and in opposition to said webs of the other wing, and said inner ends of said webs defining a space for acceptance of said book therebetween;

the arrangement such that said book can be pivotted forward and upwardly on said hinge means and opened to rest on said top surface while held, release of said book causing the book to pivot and slide down over said arcuate forms at the top ends of said webs, to a closed condition.

3,967,808

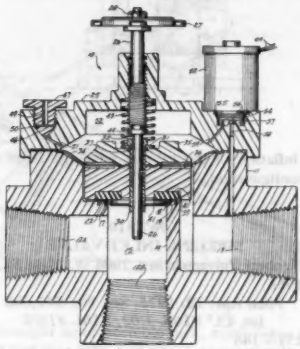
IRRIGATION VALVE WITH METAL SEAT

Calvin A. Lieding, Glendora, Calif., assignor to Irrigation Specialties Company, San Gabriel, Calif.

Filed Sept. 22, 1975, Ser. No. 615,587

Int. Cl.² F16K *25/00*

U.S. Cl. 251—46 **7 Claims**



1. A fluid valve, comprising:

a valve body made of a plastic material and defining a flow passage therethrough with inlet and outlet conduits at opposite ends of the passage;

a metal seat ring having a generally U-shaped cross-section defined by a seat portion and a pair of spaced-apart sidewalls extending from the seat portion, the sidewalls being embedded in the plastic valve body to position the seat portion around the flow passage between the inlet and outlet conduits, at least one of the sidewalls being nonparallel to a central axis of the ring;

a valve closure member mounted in the valve body to be movable into seating engagement with the seat portion to close the valve; and

means on the valve body and connected to the closure member for moving the closure member against and away from the seat portion to close and open the valve.

3,967,809

LINEAR FLUIDIC ACTUATOR

Michael J. Skantar, P.O. Box No. 13, Pleasant Unity, Pa. 15676

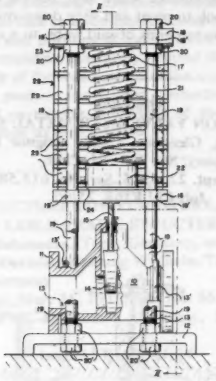
Filed Oct. 3, 1974, Ser. No. 511,943

Int. Cl.² F16K *31/126*

U.S. Cl. 251—61 **14 Claims**

1. A linear fluidic actuator comprising a tubular envelope closed at opposite ends and inflatable from a flat deflated condition to a certain maximum circular diameter, and a flexible inextensible tension means of fixed length carrying said tubular envelope in a position such that the longitudinal axis of the inflated envelope is transverse to the line of action of said tension means, whereas the diametral axis of the deflated envelope lies in a plane paralleling said line of action,

one end of said tension means being fixed in position and the other end being movable linearly toward the fixed end responsively to inflation of the tubular envelope from a flat to a circular configuration.

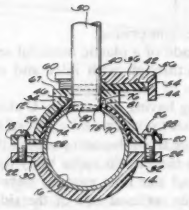


3,967,810

PIPELINE INLET VALVE

Norman Nrobert Pulvermacher, 1008 W. Main St., Princeton, Wis. 54968

Filed Apr. 28, 1975, Ser. No. 572,608
Int. Cl.² F16K *3/02*; F16L *41/00*
U.S. Cl. 251—146 5 Claims



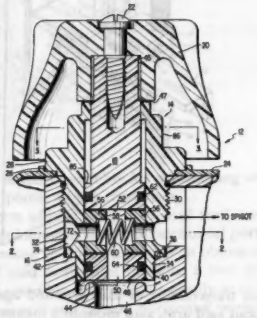
1. A valve assembly comprising a valve housing having first and second valve housing parts, one of said parts having a planar surface and a shoulder, a through opening in said surface for communication with a manifold line, means for clamping said valve parts in assembly and adapted for securing said valve housing in a selected location on a manifold line, said first housing part including a valve cover, said cover having a lower surface spaced from said planar surface of said first part and including an elastomeric seal occupying the space between said cover and said planar surface, said cover including a depending stop flange, means for pivotally mounting said valve cover on said first housing part for generally parallel movement with respect to said planar surface between a first position closing and sealing said through opening with said stop flange engaging said shoulder and defining said first position, a second displaced position and a third position remote from said second position with said seal free of said planar surface, a pipe sized to be received in said through opening, and said valve cover having a recess complimentary in shape to said inlet pipe and wherein said recess engages said inlet pipe when said valve cover is in said second position, and biasing means on said first part for urging said cover into said first and second positions with said valve cover seal engaging said inlet pipe in said second position and covering and sealing said opening in said first position.

3,967,811

ALL PLASTIC VALVE CONSTRUCTION

Robert J. Keller, III, Richmond, Va., assignor to Kel-Win Manufacturing Company, Inc., Chester, Va.

Filed Dec. 3, 1975, Ser. No. 637,135
Int. Cl.² F16K *25/00*
U.S. Cl. 251—175 12 Claims



1. A valve construction comprising:
a. a hollow underbody member,
b. a hollow valve body member threadedly received in a first bore of said underbody member,
1. said hollow valve body member having a depending skirt portion insertable into a second bore of said underbody member and establishing an interference fit therewith,
2. said hollow valve body member further having an aperture communicating with spigot means,
c. a plastic stem member mounted for rotation within said hollow valve body member,
d. handle means for rotating said plastic stem member,
1. said stem member being provided with a supply port and supply passageway in fluid communication with said underbody member and at least one laterally extending passageway to an exit port,
2. said exit port of said stem member being alignable with said aperture in said hollow valve body member,
e. at least one hollow resilient seal member received in said laterally extending passageway,
f. and means for urging said hollow resilient seal member toward the port adjacent said hollow valve body member.

3,967,812

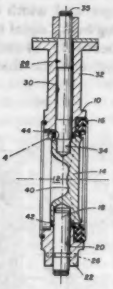
SHAFT SEAL FOR CORROSION RESISTANT BUTTERFLY VALVE

Fred T. Newell, and Gerald B. Smith, both of Bradford, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 26, 1975, Ser. No. 553,365
Int. Cl.² F16K *31/44*
U.S. Cl. 251—214 10 Claims

1. In a rotatably operable pipe line valve for corrosive service including a metal body defining a flow passage between an inlet and an outlet, a closure member in said passage operable between open and closed positions thereof, a thruport seal in said passage for cooperating with said closure member in its closed position and an operator shaft extending through said body from a driving connection internally enclosed within said closure member to a location external of said body, an annular seal member surrounding said shaft in axially squeezed relation interposed between said closure member and said body thereat, said seal member being operably effective for shaft

protection against line content independent of said thruport seal and comprising an elastomer and deflection control



means operative against said elastomer to restrict radial deflection thereof.

3,967,813

BUTTERFLY FLAP VALVE

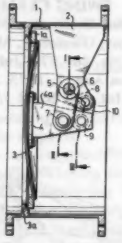
Karl Heinrich Fröhlich, Bergstrasse 47, D-6672 Rohrbach, Saar, Germany

Filed Nov. 25, 1974, Ser. No. 527,057

Claims priority, application Germany, Dec. 18, 1973, 2362966

Int. Cl.² F16K *1/16*

U.S. Cl. 251—298 3 Claims



1. A butterfly flap valve comprising:

a housing containing a sealing surface and suitable for fluid flow along an axis;

a generally circular butterfly flap having a central flow blocking portion and a periphery mateable with said sealing surface for closing said valve and adapated to be firstly axially displaced from said sealing surface and thereafter turned to lie generally parallel to the axis of fluid flow to open said valve, said flap having a projection extending from the central portion thereof parallel to the axis of fluid flow when said flap is in the closed position;

a first journal located in said housing for journalling a shaft extending across the flow of fluid within said housing and adjacent said projection of said flap, a support means in said housing extending toward said projection when said flap is in the closed position and containing a second journal for receiving the end of said shaft within said housing;

a single lever arm mounted on said shaft and pivotally connected to said projection of said butterfly flap for moving said flap upon rotation of said shaft, said lever arm having a length which is small compared to the diameter of said flap; and

a single link pivotally connected to said projection at a location which is axially spaced from the connection of said lever in a direction away from said flap and connected to said support means adjacent said lever arm for guiding the movement of said butterfly flap during opening, said link having a length which is small compared to the diameter of said flap, said lever arm and said link being positioned so as to form an articulated quadrilateral when said flap is closed.

3,967,814

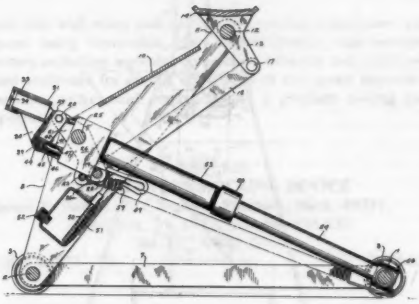
HIGH CAPACITY HAND PORTABLE JACK

James A. Leibundgut, Waterford, Wis., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Apr. 30, 1975, Ser. No. 573,171

Int. Cl.² B66F *3/24*

U.S. Cl. 254—8 B 8 Claims



1. A lightweight hand portable jack, comprising a chassis having front and rear axles and wheels supporting the axles, a pair of laterally spaced parallel tension members connected at opposite ends to each of the axles and free of other members of the jack, a lift arm of generally triangular configuration pivoted directly to the rear axle and extending forwardly of the jack to a line adjacent to the front axle, a hydraulic unit directly pivoted at the forward end to the front axle and pivoted at the rear end to the upper portion of the lift arm generally centrally of the jack to actuate the lift arm, a lifting saddle having depending members pivotally supported at the forward end of the jack, link means pivoted at the forward end of the jack to the saddle and at the rear end to the hydraulic unit, and means to actuate the hydraulic unit to raise the lift arm operating against the rear axle and the hydraulic unit operating against the front axle and thereby raise the saddle, the said tension members only being subject to tension thereby requiring only lightweight members and the bending moment developed in the jack being absorbed solely by the lift arm.

3,967,815

DUSTLESS MIXING APPARATUS AND METHOD FOR COMBINING MATERIALS

James H. Backus, 3320 Franconia Road, Alexandria, Va. 22310, and Charles E. Cornwell, 7104 Marlan Drive, Alexandria, Va. 22307

Filed Aug. 27, 1974, Ser. No. 500,956

Int. Cl.² B28C *5/46*

U.S. Cl. 259—148 17 Claims

9. Apparatus for dustless mixing of materials comprising in combination:

a. a mixing container;

b. one or more symmetrical impellers mounted for rotation within said container;

c. means for rotating said impellers at a predetermined rpm;

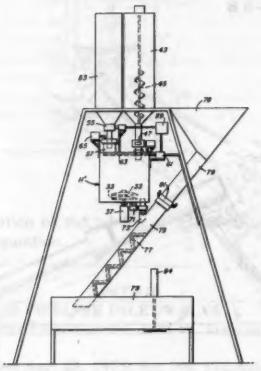
d. means for metering a first material into said container, said impellers establishing a vortex in the metered material;

e. means for metering further material to the container for mixing with said first metered material through the use of said vortex;

f. said first material being a fluid and further comprising means for spray cleaning the container with said fluid metered under pressure; and,

g. means for combining a measurement of the volume of spray cleaning fluid along with a measurement of the volume of fluid metered to determine the total amount of fluid metered into the container.

13. A dustless mixing method using a closed container supplied with materials to be combined comprising the steps of:



a. metering a first material into the container;

b. establishing agitation in the metered material;

c. metering further material to the container;

d. developing a vacuum in the container to draw off air displaced by said materials as the materials enter the container; and

e. mixing said materials within the container.

14. The method of claim 13 wherein said first material is a fluid, and comprising the further step of:

spray cleaning the container with said fluid metered under pressure and combining the volume of spray cleaning fluid used in cleaning with the volume metered to determine the total amount of fluid metered into the container.

3,967,816

FIXTURE BLOCK SERVING AS A MANUFACTURING ACCESSORY

Hans Ramsperger, Lossburg-Rodt, and Rolf Kübbin, Oberndorf (Neckar), both of Germany, assignors to Mauser-Schaerer GmbH, Germany

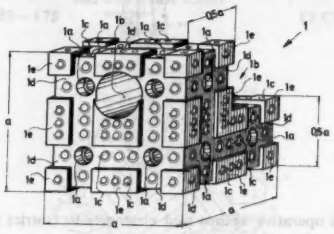
Filed Feb. 20, 1975, Ser. No. 551,090

Claims priority, application Germany, Feb. 21, 1974, 2408350

Int. Cl.[2] B23Q *3/00*

U.S. Cl. 269—9 **7 Claims**

1. In a building block system including a fixture block serving as a manufacturing accessory, particularly for the machining of metal workpieces and the like, adapted to be combined with further correspondingly designed accessories with the aid of which workpieces to be machined can be brought into proper position or orientation for the particular machining operation, such as planing, milling, drilling, honing, grinding, and the like, and maintained in such proper position or orientation during at least one working cycle, the improvement comprising a basic fixture block formed as an L-shape body, having its shape derived from the geometrical form of a rectangular parallepiped with all intersecting surfaces being mutually perpendicular to each other, having a pair of mutually perpendicular legs each having relatively wider inner and outer surfaces joined to each other by relatively narrow side surfaces, with the length and width of the relatively wider outer surface of each leg being equal to each other and to the length and width, respectively, of the relatively wider outer surface of the other leg, and the thickness, across the rela-



tively narrow surfaces, of each leg being equal to one-half such length or width; the inner, outer and side surfaces of said legs forming contact surfaces and being formed with aligned rows of coplanar projecting areas separated by machined rows of coplanar recessed areas; all the surfaces of said block being formed with a plurality of tapped bores and with smooth untapped bores of different diameters, which at least partially intersect each other within the block.

3,967,817

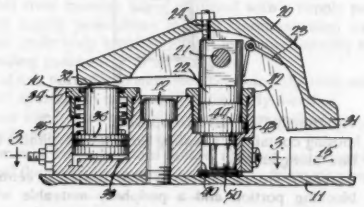
SWING CLAMP

Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Continuation of Ser. No. 487,570, July 11, 1974, abandoned. This application Aug. 7, 1975, Ser. No. 602,760

Int. Cl.[2] B25B *5/06*

U.S. Cl. 269—32 **3 Claims**



1. A swing clamp comprising a body with a bore, a pivot shaft rotatably mounted in said bore and having an exposed end and an opposite end with an integral crescent-shaped cam having an outer surface coincident with the perimeter of the shaft and in contact with the wall of the bore, a clamp arm pivotally mounted on the exposed end of said pivot shaft for movement between operative and inoperative positions by rotation of the pivot shaft, a clamping piston positioned beneath an end of the clamp arm when the clamp arm is in operative position for pivoting the clamp arm relative to the pivot shaft, means for rotating said pivot shaft including a pair of operating pistons movable in cylinders extending toward said bore and at an acute angle to each other with said operating pistons in engagement with opposite ends of said crescent-shaped cam whereby force exerted by an operating piston rotates said pivot shaft and said cam is supported by the wall of the bore, one of said operating pistons being fluid operated, a stop for said last-mentioned piston positioned at an end of

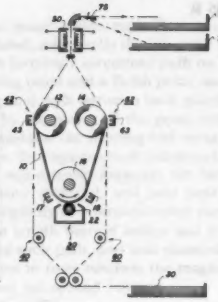
the cylinder and adjacent said cam to limit the stroke of the fluid operated piston, means external of the body for adjusting said stop along a line parallel to the axis of the last-mentioned piston and offset from the path of movement of the crescent-shaped cam, the stop being positioned for engagement by the last-mentioned piston while the latter also engages an end of the cam, and a hydraulic circuit including communicating body passages leading to said clamping piston and said fluid operated piston and a sequencing valve in one of said passages openable to direct hydraulic fluid to said clamping piston after the hydraulic fluid pressure has built up to a predetermined value resulting from said fluid operated piston being held against said stop.

3,967,818

DUPLICATING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1974, Ser. No. 532,783
Int. Cl.² B41F *13/64*
U.S. Cl. 270—18 **5 Claims**



5. A method of producing collated sets of precollated information comprising the steps of

transporting a web bearing precollated graphic information in a first direction, developing the web by contact with a rotatable member, transferring developed images onto copy sheets at a first transfer station, and directing sheets in sequence to a first tray image face down and then reversing the direction of the web and rotatable member, and transferring developed images onto copy sheets at a second transfer station, and directing the sheets from the second transfer station to a second tray image face up and repeating the aforementioned steps to produce collated copy sets for movement of the web in each direction.

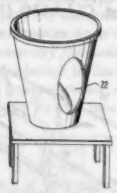
3,967,819

COMBINATION CONTAINER AND BALL GOAL WITH REFLECTOR

Jonathan Jay Lewis, 4103 Priscilla Lane, Baltimore, Md. 21208

Filed Feb. 10, 1975, Ser. No. 548,729
Int. Cl.² A63B *63/02*
U.S. Cl. 273—103 **4 Claims**

1. A combination container and ball goal comprising an enclosure having side and bottom walls and an opening through its upper end for passage of a ball from outside of said enclosure into said enclosure, said side wall having an aperture for passage of the ball from within the container to the outside of the container, and means carried by said enclosure for selectively opening and closing said aperture whereby said enclosure is adapted for use as a ball goal or as a container open at its upper end and bounded by said side and bottom walls, means carried by and within said enclosure for deflecting the ball received through the opening at its upper end toward said side wall aperture, said deflecting means including a side wall panel forming at least a portion of said opening and closing means, and means for releasably securing said side wall panel in position closing said side wall aperture whereby said side wall panel forms a substantially continuous part of



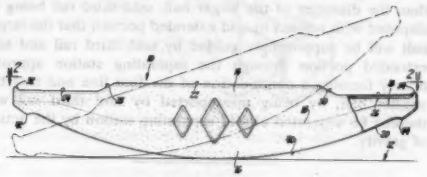
said side wall when said enclosure is used as a container, said panel being removable from said enclosure, said securing means including a pivotal connection between said panel and said enclosure for pivotal movement of said panel between a position within said enclosure and a position closing said aperture.

3,967,820

AMBULATORY ROCKING DEVICE

James T. Harper, 824 Beecher, Pittsford, Mich. 49271

Filed Nov. 24, 1975, Ser. No. 634,432
Int. Cl.² A63B *23/04*
U.S. Cl. 272—70 **2 Claims**



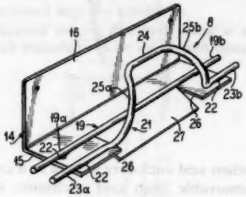
1. A substantially hollow and light weight bi-ped supporting rocking-and-ambulating recreation device having transverse width substantially in excess of either its vertical height or longitudinal length, said device comprising top and bottom shell-like portions mutually engaging and supporting each other at a single mating lip encircling the periphery of said device, said top and bottom shell-like portions comprising respectively top and bottom transversely extending surfaces and front and back longitudinally spaced apart walls extending vertically from said top and bottom surface, said top surface comprising a substantially flat central portion bounded at each of its outboard ends by a downwardly recessed platform portion for locating and supporting a respective foot of said bi-ped, said bottom surface comprising a substantially arcuate portion bounded at each of its outboard ends by a downwardly extending rocking stop portion, and said front and back walls of said top member defining one side of said mating lip and comprising therealong contiguous first and second top wall portions and said front and back walls of said bottom member defining the other side of said mating lip and comprising therealong contiguous first and second bottom wall portions aligned coplanar respectively with said first and second top wall portions and mated thereto at said mating lip, said first portions of each said top and bottom wall portions being substantially coplanar in a first vertical plane to provide a primary support of said bi-ped in the verticle direction and said second portions of said top and bottom wall portions being coplanar in a second vertical plane different from said first vertical plane for a secondary support of second bi-ped in said verticle direction.

3,967,821

BALL SEPARATING DEVICE FOR POOL TABLES AND THE LIKE

Stuart C. Bagley, Glen Ellyn, Ill., assignor to Armac Enterprises, Inc., Chicago, Ill.

Filed Dec. 5, 1974, Ser. No. 529,805
Int. Cl.[2] A63D 15/00
U.S. Cl. 273—11 C 8 Claims



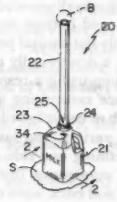
1. A device for separating a ball of one diameter from a ball of slightly larger diameter, comprising guide means forming a two-rail track, the rails of which are uniformly spaced a distance less than the diameter of either ball, supportingly conducting all balls to a separating station, one of the rails of said track operatively terminating the support of said smaller ball at said station, the other of said rails having an extended portion continuing through the separating station, and a third rail supported higher than and cooperating with said extended portion of said other rail and uniformly spaced therefrom a distance greater than the diameter of the smaller ball and less than the diameter of the larger ball, said third rail being so disposed with respect to said extended portion that the larger ball will be supportingly guided by said third rail and said extended portion through the separating station approximately forming a continuation of the first line and that the smaller ball, by being unsupported by said third rail will thereby be separated at said separating station by the action of gravity.

3,967,822

METHOD OF MAKING A BALL TEE

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429, and Joseph V. Tassone, 2425 Rawnsdale Road, Kettering, Ohio 45440

Division of Ser. No. 326,806, Jan. 26, 1973, Pat. No. 3,858,879. This application Oct. 23, 1974, Ser. No. 517,300
Int. Cl.[2] A63B 69/40
U.S. Cl. 273—26 R 10 Claims



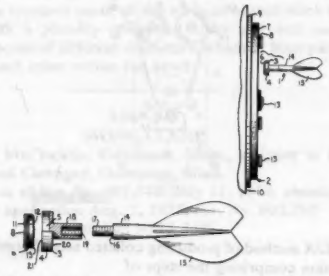
1. A method of making a baseball and softball ball tee comprising the steps of providing a conventional container means of a box or bottle type that originally contained a product therein and which has a top wall spaced from a bottom wall thereof by an enlarged chamber of said container means, telescopically disposing an elongated tubular ball support in an opening in said top wall of said container means by snuggly fitting the outer periphery of said ball support through said top wall at said opening so that said ball support is supported by said top wall snuggly engaging said ball support at said opening and said ball support extends substantially vertically out of the opening to a predetermined height thereabove whereby when said container means has said bottom wall disposed on a support surface said tubular ball support will be disposed in an upright manner so that a ball having an external diameter within the range of the diameter of a standard baseball to the diameter of a standard softball can be hit off of the upper end thereof in a ball strike zone which is at least equal to a vertical height defined by the batter's knees, and stabilizing the lower end of said tubular ball support with said bottom wall of said container means so that both the top and bottom walls of said container means support said tubular ball support in said upright manner.

3,967,823

TARGET AND SEPARABLE TARGET MARKERS FOR A DART

Robert E. Yount, 11108 W. 70th Terrace, Shawnee, Kans. 66203

Filed June 23, 1975, Ser. No. 589,125
Int. Cl.[2] F41J 3/00
U.S. Cl. 273—95 R 1 Claim



1. A dart game comprising in combination:

a. a target having an outwardly presented face provided with a textile covering having a surface of a pile fabric having upstanding loops;

b. a plurality of darts each adapted to be thrown toward said target, said darts each having an elongated shaft;

c. an enlarged end portion for each of said darts, said enlarged end portions each having a peripheral wall defining a recess therein, said enlarged end portions each being removably mounted on said shaft of a respective one of said darts;

d. a target marker for each of said enlarged end portions, said target markers each being separably received in a respective one of said enlarged end portions and each having a forwardly presented first face provided with a textile covering having integral outwardly extending stiff hooks and spines formed of broken loops of filament adapted for retentive imbedment in said target surface upon engagement therewith whereby each of said target markers is retained on said target in a manner requiring greater force to separate same than force required to separate said target marker and said enlarged end portion upon impact of said dart upon said target; and

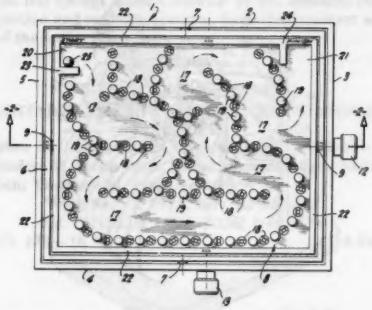
e. a second face for each of said target markers and provided with a textile covering having a surface of pile fabric having upstanding loops whereby said second face is adapted to retain thereon said first face of an other of said target markers upon engagement thereby.

3,967,824

GAME BOARD UNIT

William J. Lund, 1869 Carmel Ave., Stockton, Calif. 95204

Filed May 22, 1975, Ser. No. 579,773
Int. Cl.² A63F 7/04
U.S. Cl. 273—110 5 Claims



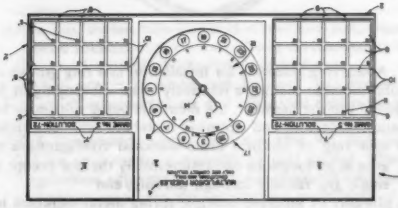
5. In a game board which embodies an upwardly facing, player-manipulated, universally tiltable game board, means on the game board forming a circuitous path on the face thereof between a starting point and a finish point, and a ball adapted to be run along said path between such points in response to variable tilting by the player of the game board in a manner attempting to maintain the running ball on said path intermediate its margins; the improvement characterized by the game board being of non-metallic material, the ball being of magnetically-responsive material, and said path-forming means including a multiplicity of board-mounted elements which for substantially the length thereof define and magnetically border both sides of such path, and said elements being a multiplicity of magnets in rows wherein the magnets are disposed in relatively close but spaced relation.

3,967,825

EDUCATIONAL GAME HAVING A RANDOM NUMBER SELECTOR

James A. Anania, Sr., 801 N. 6th St., No. 716, P.O. Box 186, Newark, N.J. 07107

Filed May 14, 1975, Ser. No. 577,233
Int. Cl.² A63F 3/06
U.S. Cl. 273—135 B 20 Claims



1. An educational game comprising:

a. at least one game board surface divided into sixteen substantially equal spaces having four spaces in each direction and being divided laterally and longitudinally in order to define separate individual spaces for the reception of numbered tokens;

b. a plurality of numbered tokens containing numerals thereon, said tokens to be placed within the sixteen spaces of the game playing board;

c. disc means comprising a generally circular disc having reference numerals thereon which correspond identically to the numerical tokens to be placed on the game board;

d. random selector number means providing means for reception of said disc and for selecting any of said numbers on said disc by random means;

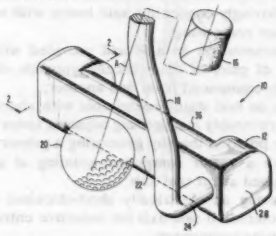
whereby on selection of a number on said disc by said random selector means, a numerical token corresponding identically to that number is inserted into one of said sixteen spaces on said game surface, said selection of numbers and insertion of numerical tokens continuing until all of the sixteen spaces on said game board contain numerical tokens whereby the tokens must provide the indicated numerical solution to the game by the addition of said numerical tokens when added longitudinally, latitudinally, diagonally or any four adjoining spaces.

3,967,826

GOLF PUTTER

Clay Judice, P.O. Box 2782, 222 Eraste Landry Road, Lafayette, La. 70501

Filed Dec. 30, 1974, Ser. No. 537,570
Int. Cl.² A63B 53/04
U.S. Cl. 273—167 F 5 Claims



1. A golf club for stroking a golf ball comprising an elongated shaft, a head having a flat surface for striking a golf ball and a shank connecting one end of said shaft and said head, said shaft having an axis forwardly of and in a plane generally parallel to and spaced forwardly a predetermined distance from a plane containing said striking surface so that the axis extended is adapted to intersect a golf ball when said head lies in striking position relative to the ball, said shank extending from said shaft for connection with the striking surface of said head at a heel portion thereof, said head having a cavity opening downwardly through the bottom face of said head, the cavity being offset toward the heel portion of said head to provide a greater weight in the toe portion of said head than in the heel portion thereof, thereby shifting the center of gravity of the head towards said toe portion the connecting portion of said shank and the heel portion of said head lying on one side of an oblique plane containing the axis of said shaft and extending normal to a plane containing said striking surface, the toe portion of said head and the center of gravity of said head lying on the other side of said oblique plane, the cavity being so located to balance the club about the shaft axis such that when the shaft lies in a horizontal position the club head will be so oriented that the striking face lies in a horizontal plane;

said head further including a recess formed along its upper face and a side face thereof remote from said striking surface, and spaced midway between the heel and toe portion of said head the recess locating the center of gravity of said head above the median of the head height;

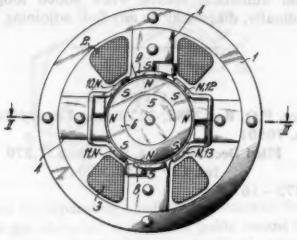
the bottom face of said head being recessed between its heel and toe portions so that drag resistance during stroking is minimized.

3,967,827

SYNCHRONIZED INDUCTION MOTOR

Rudiger Lehmann, St. Georgen, Black Forest, Germany, assignor to Firma Dual Gebruder Stiedinger, St. Georgen, Black Forest, Germany

Filed Apr. 11, 1974, Ser. No. 460,141
Claims priority, application Germany, Apr. 13, 1973, 2318728
Int. Cl.² G11B 17/00; H02K 21/12
U.S. Cl. 274—1 E 4 Claims



1. A record player having a turntable, a motor and transmission means drivingly connecting said motor with said turntable, said motor comprising:

a stator centered on an axis and provided with an even number of pairs of diametrically opposite stator poles angularly equispaced from one another;

coil means on said stator energizable with alternating current for reversibly magnetizing adjacent stator poles with opposite polarity, thereby generating a primary magnetic field with a vector component rotating at a predetermined speed about said axis;

a rotor having an electrically short-circuited cylindrical body centered on said axis for inductive entrainment by said rotating component;

a permanently magnetic ring coaxially secured to said body, said ring forming a multiplicity of angularly equispaced magnet poles of alternate polarities equaling twice the number of said stator poles; and

magnetically permeable armature means on said stator forming a first and a second set of pole shoes respectively associated with alternate stator poles and magnetically coupled therewith for joint magnetization by said coil means, the pole shoes of said first set being substantially aligned with their associated stator poles, the pole shoes of said second set lying substantially midway between their associated stator poles and adjoining stator poles for establishing a secondary magnetic field rotating at half said predetermined speed for the synchronous entrainment of said rotor by coaction of said pole shoes with said magnet poles, said coil means being constructed and arranged to provide an induction torque insufficient to accelerate said rotor beyond the speed of said secondary magnetic field.

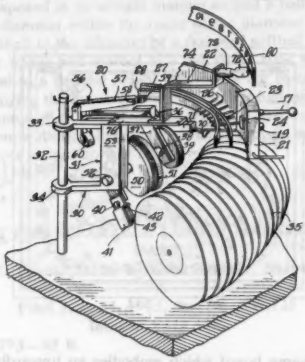
3,967,828

RECORD SELECTOR MECHANISM FOR A PHONOGRAPH SYSTEM

Alvin S. Topolski, Tonawanda, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Mar. 3, 1975, Ser. No. 554,584
Int. Cl.² G11B 17/22, 3/60
U.S. Cl. 274—10 D 6 Claims

1. In a phonograph system the combination comprising: first and second spaced-apart resilient disk means having opposed frictional surfaces for engaging opposite faces of a disk type record therebetween, said frictional surfaces engaging the faces of said record and rotationally driving said record prior to centering thereof, drive means engageable with at least one of said spaced-apart disk means for driving said disk means and said record placed therebetween at playing speed, coarse means for placing the center of said record within close proximity of said spaced-apart disk means, dynamic self-centering means formed on said disk means and engageable with the



faces of a record to effect self-centering of said record upon rotation of said disk means and said record, transducer means engageable with said record for reproducing the information thereon, and reproducing means for producing an audio output of the information on said record.

3,967,829

SEAL RING

William A. Rogers, San Pedro, Calif., assignor to Rogers-Dierks, Inc., San Pedro, Calif.

Continuation of Ser. No. 339,649, March 9, 1973, abandoned.
This application Nov. 25, 1974, Ser. No. 526,840
Int. Cl.² F16J 9/06
U.S. Cl. 277—149 2 Claims

1. A seal ring assembly for installation in a ring groove of a tubular member making a relatively loose telescoping fit with a second tubular member, the members being subject to temperature variations and vibration therebetween, comprising:

a split ring of uniform cross-sectional configuration and area at all locations circumferentially thereof except at a single gap radially through the ring; and

a plurality of separate multiple-spring metal members having a shallow-V-shape and being of substantially uniform cross-section symmetrically arranged around the ring and each welded at a generally central portion to a peripheral surface of the ring, the central portion being annealed to divide each multiple-spring member into a pair of leaf springs which act substantially independently of each other when deflected, each leaf spring being substantially freely supported at its ends by the adjacent peripheral surface of the split ring so the springs deflect and react under loading substantially as simple beams; the metal members being sufficient in number and length that the several leaf springs cumulatively subtend a substantially

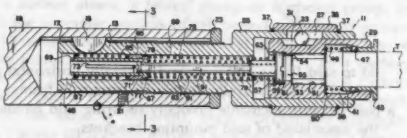
major part of the arc of the ring; the leaf springs being operative to urge the ring radially away from the grooved member substantially uniformly along the extent of the ring when the ring is fitted into the ring groove to effect a seal between the tubular members, the leaf springs maintaining effective seal loading due to decoupling of the leaf springs in each member by the annealed central portion and resulting low-rate, large-displacement action of the leaf springs.

3,967,830

ADJUSTABLE TENSION AND/OR COMPRESSION TAP HOLDER

Theodore M. Smith, Mount Clemens, Mich., assignor to The Theodore M. Smith Trust, Mount Clemens, Mich., Lucille G. Smith; Theodore M. Smith, trustees

Filed Nov. 3, 1975, Ser. No. 628,387
Int. Cl.² B23B *31/08*; B23G *1/46*, *3/06*
U.S. Cl. 279—16 **6 Claims**



1. An adjustable compression tap holder comprising an elongated shank having an internally threaded bore and a drive socket at one end communicating with said bore;

said shank adapted for securing within a longitudinally adjustable power rotated spindle;

a carrier of cylindrical shape having a bore therethrough slidably nested within said socket and having a series of spaced longitudinal drive slots;

a corresponding series of drive balls nested and retained in corresponding slots in said socket and operatively extending into said drive slots, for interconnecting said shank and carrier and providing for longitudinal adjustment of said carrier relative to said socket;

said carrier adapted to receive a quick release tap retaining bushing;

a tension and compression adjusting screw nested in said shank bore and at one end secured to and journalled upon said carrier;

a tension and compression adjusting nut threaded into said shank bore;

connecting means between said screw and nut, whereby manual rotation of said screw effects corresponding rotation and longitudinal adjustment of said nut;

a tension spring between said nut and said connecting means, biasing said screw and connected carrier inwardly of said socket;

and a compression spring between said nut and carrier biasing said carrier outwardly of said socket, whereby longitudinal adjustment of said nut regulates said tension and compression and the longitudinal positioning of said carrier and the tap carrier thereby relative to said socket.

3,967,831

SPRING COIL HOLDING DEVICE

Ming-Chao Chang, No. 61-28, 18 Lin, Chung Chou Li, Shih Lin, Taipei, and Chun-Ya Chen, No. 1 Kuo Chun St., San Chung, Taipei Hsien, both of China

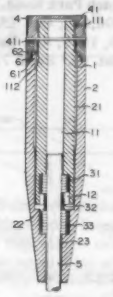
Filed Oct. 21, 1974, Ser. No. 516,670
Int. Cl.² B23B *31/04*
U.S. Cl. 279—23 R **2 Claims**

1. A spring holding device for clamping a rod-shaped object comprising:

a housing sleeve having a bore therethrough;

an actuator sleeve having a bore therethrough and coaxially disposed within said housing sleeve so that one end of said actuator sleeve projects axially beyond a corresponding adjacent end of said housing sleeve, said housing and actuator sleeves being rotatable relative to one another;

a coil spring having at least three sections integral with each other and each section comprising a plurality of coils, said sections including an end section at each end of the coil spring and a center section joining the end sections, said center section having a circular configuration and being smaller in diameter than the end sections and the end sections both being substantially elliptical in transverse configuration whereby the end sections may be operatively engaged and turned relative to one another to expand the coils of the center section to release a rod-shaped object gripped by the coils of the center section,



and the natural resiliency of the coils is such that the center section automatically closes on and grips a rod-like object inserted thereinto, and

a cap secured on the projecting end of the actuator sleeve, the other end of the housing sleeve projecting axially beyond the adjacent, other end of the actuator sleeve, said sleeves having axially aligned circular bores therethrough, a portion of the bore in the actuator sleeve at the other end thereof and an adjacent portion of the bore in the housing sleeve being elliptical in transverse cross-section, and one of said end sections of said spring disposed in said actuator sleeve elliptical bore portion and the other end section of said spring being disposed in said housing sleeve elliptical bore portion so that, upon rotation of said sleeves relative to one another, said spring end sections rotate relative to one another to expand the coils of the center section.

3,967,832

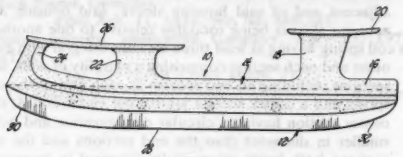
COMPOSITE SKATE ASSEMBLY

Alan F. Chambers, Agincourt, Canada, assignor to Nylite Skate Company of Canada Ltd., Markham, Canada

Filed Oct. 6, 1975, Ser. No. 619,751
Int. Cl.² A63C *1/02*
U.S. Cl. 280—11.12 **7 Claims**

1. An ice skate assembly comprising a hardened steel blade having upper and lower surfaces extending throughout the length thereof, said lower surface providing an ice-engaging portion, a plurality of longitudinally spaced holes formed transversely of said blade subadjacent said upper surface, a thermoplastic blade-supporting body molded about said blade to enclose said upper blade surface and said holes while leaving unenclosed the ice-engaging portion of said lower blade surface, said plastic body including integral elements extend-

ing through said blade holes, and means disposed intermediate said integral body elements and said blade holes and which



means permit said elements to adjust relative to said blade as said plastic body shrinks after molding about said blade.

3,967,833

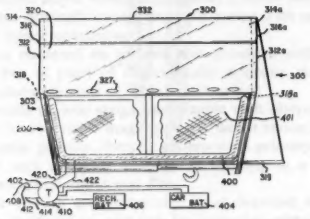
BABY HOLDING DEVICE

Henry Fleischer, 18 Notch Park Road, Little Falls, N.J. 07424

Division of Ser. No. 406,620, Oct. 15, 1973. This application Mar. 10, 1975, Ser. No. 556,708

Int. Cl.² B62B 7/08

U.S. Cl. 280—639 **37 Claims**



1. A collapsible baby holding device comprising a collapsible frame and baby holding means supported on said frame, said frame comprising a primary support member comprising a substantially elongated member, a pair of secondary support members having first and second end portions, for supporting said baby holding means, said first end portions of said pair of secondary support members being connected to said primary support member, and the second end portions of said secondary support members being spaced from each other and adapted to move toward each other and away from said primary support member, a wheel support member having first and second end portions and an intermediate portion, said first and second end portions extending from said primary support member, and said intermediate portion being disposed in contact with said primary support member, at least one front wheel rotatably connected to said first portion of said wheel support member, a pair of back wheels rotatably connected to said second portion of said wheel support member in close proximity to said second end portion thereof, at least a pair of cross members connected to said pair of secondary support members; handle means for maneuvering said frame; and shielding means for protecting the baby, connected to said baby holding means.

3,967,834

MOTORCYCLE LIFTING DEVICE

George J. La Charite, Clawson, Mich., assignor to Rolland G. C. La Charite, Santa Ana, Calif. and Gene V. Rowley, Clawson, Mich., part interest to each

Filed Nov. 29, 1974, Ser. No. 527,940

Int. Cl.² B62J 25/00, 39/00

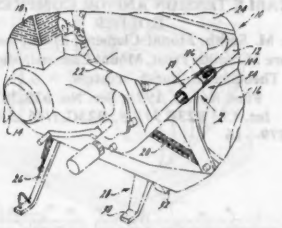
U.S. Cl. 280—291 **5 Claims**

1. In combination with a motorcycle or similar two-wheeled vehicle having a frame,

a retractable vehicle standard and a seating area for the vehicle operator,

a pair of substantially identical manually engageable handles secured to the opposite sides of the vehicle frame at positions adapted to be manually grasped by the vehicle operator for elevating the vehicle and thereby facilitating placing the vehicle on the standard,

first and second mounting bracket means for supporting each of said handles for pivotal movement between a first downwardly projecting position arranged generally paral-



lel to said frame and a second generally horizontal position extending laterally outwardly from said frame,

a pair of pivot elements pivotally securing said handles to the associated of said mounting brackets,

interengageable abutment means on said handles and said mouting brackets for preventing said handle from pivoting upwardly beyond said second position, and

securing means including a threaded element fixedly attached to a portion of said frame adjacent to each of said handles for securing said mounting brackets thereto.

3,967,835

PRESSURE-SENSITIVE COPYING MATERIAL

Minoru Ozutsumi; Yoshihide Miyazawa; Masahiko Yamaguchi, all of Tokyo; Akio Watanabe, and Keiso Saeki, both of Fujimiya, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo and Fuji Photo Film Co., Ltd., Minami-ashigara, both of, Japan

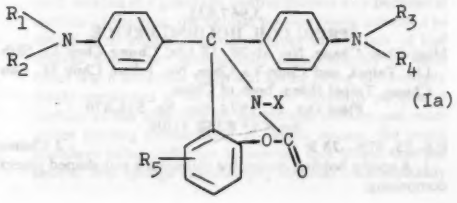
Filed July 8, 1975, Ser. No. 594,174

Claims priority, application Japan, July 8, 1974, 49-77433

Int. Cl.² B41M 5/16

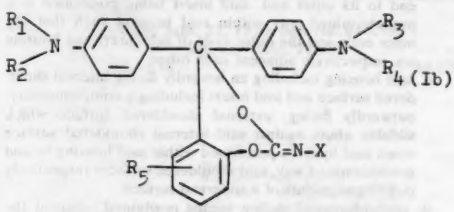
U.S. Cl. 282—27.5 **8 Claims**

1. A pressure-sensitive copying material comprising a support having thereon a microencapsulated color former capable of forming a color on contact with an electron-donating color developer, the color former comprising at least one of a benzoxazine derivative represented by the formula (Ia)



(Ia)

, a benzodioxane derivative represented by the formula (Ib)



or a mixture thereof; wherein R_1 and R_3, which may be the same or different, each represents a lower alkyl group having 1 to 4 carbon atoms, a benzyl group or a phenyl group, in which the aromatic nucleus of the benzyl and phenyl groups may be substituted with a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms or a di-lower alkylamino group having 1 to 4 carbon atoms in each of the alkyl moieties thereof; R_2 and R_4, which may be the same or different, each represents a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, a benzyl group or a phenyl group, in which the aromatic nucleus of said benzyl and phenyl groups may be substituted with a halogen atom or a di-lower alkylamino group having 1 to 4 carbon atoms in each of the alkyl moieties thereof; R_5 represents a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms, a halogen atom, a di-lower alkylamino group having 1 to 4 carbon atoms in each of the alkyl moieties thereof, a dibenzylamino group, an N-lower alkyl-N-benzylamino group having 1 to 4 carbon atoms in the lower alkyl moiety thereof, an N-lower alkyl-N-benzylamino group having 1 to 4 carbon atoms in the lower moiety thereof, in which the aromatic nucleus of the benzyl and phenyl groups may be substituted with a halogen atom, a lower alkyl group having 1 to 4 carbon atoms, or a lower alkoxy group having 1 to 4 carbon atoms; and X represents a lower alkyl group having 1 to 4 carbon atoms, a lower alkyl group having 2 to 4 carbon atoms, a cyclohexyl group, an aralkyl group having 1 to 4 carbon atoms in the alkyl moiety thereof or an aryl group, in which the aromatic nucleus of said aralkyl and aryl groups may be substituted with a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms, a di-lower alkylamino group having 1 to 4 carbon atoms in each of the alkyl moieties thereof, a halogen atom, a nitro group, and when the aralkyl group is a benzyl group, the aromatic nucleus thereof may also be substituted with an N-lower alkyl-N-phenyl group having 1 to 4 carbon atoms in the N-lower alkyl moiety thereof.

3,967,836

OFFSET PLASTIC FLANGE FOR CONNECTING TOILET BOWLS TO DRAIN PIPES

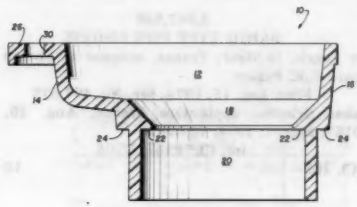
Lewis B. Izzi, Sr., 918 Surrey Drive, Shelby, N.C. 28150

Filed Apr. 16, 1975, Ser. No. 567,471

Int. Cl.² E03D *11/13*

U.S. Cl. 285—12 **1 Claim**

1. A plastic offset flange connector for positioning toilet bowls in a given position with respect to a wall and connecting its bowl outlet pipe with an unaligned floor-positioned plastic drain pipe comprising; a large connector bowl having a front and a rear wall and an outlet tube and being open at its top in a generally elliptical configuration and having a downwardly tapering outlet section inwardly overlying and terminating in said outlet tube; said outlet tube being inset from said rear wall to form a pair of spaced inner and outer annular shoulders to



optionally seat the upper end of different sized plastic drain pipes; said annular shoulders being fuseable to the upper end of said plastic drain pipe with solvent cement; and an annular flange projecting from the upper edge of said connector bowl for sealed connection with said toilet bowl.

3,967,837

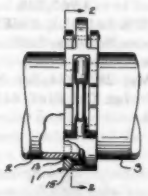
HIGH PRESSURE COUPLING APPARATUS

Robert E. Westerlund, Mequon, and Herbert A. Westerlund, Port Washington, both of Wis., assignors to Construction Forms, Inc., Cedarburg, Wis.

Filed Nov. 4, 1974, Ser. No. 520,548

Int. Cl.² F16L *17/00*

U.S. Cl. 285—112 **10 Claims**



1. In combination, a pair of conduit members located in end-to-end coaxial alignment, each of said conduit members including annular circumferential grooves spaced axially inwardly from the aligned ends and having end sidewalls spaced axially inwardly from said ends, an encircling coupling unit encircling the ends of the conduit members and having means to tighten the coupling unit about the conduit members, said coupling unit including laterally spaced side legs projecting generally radially one each into each of said grooves, said coupling legs each having an inner wall adjacent the sidewall of the corresponding groove, said adjacent sidewall and inner wall being formed to define a first pair of clamping walls

adapted to move into engagement upon closure of the clamp unit with the legs spaced from the base of the grooves to tightly clamp the conduit members to each other, said inner wall and sidewall including stepped portions defining at least one additional pair of clamping walls axially spaced from said first clamping walls, the axial spacing of said second clamping walls being greater than the axial spacing of the first clamping walls whereby only upon removal of the first clamping walls the second clamping walls move into clamping engagement upon closure of the clamp unit to maintain firm, physical connection between the conduit members.

3,967,838

BANJO TYPE PIPE UNIONS

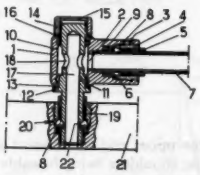
Andre Legris, St-Maur, France, assignor to Societe Legris France S.A., France

Filed Aug. 15, 1974, Ser. No. 497,675

Claims priority, application France, Aug. 20, 1973, 73.30167; Mar. 7, 1974, 74.07818

Int. Cl.² F16L *27/08*

U.S. Cl. 285—190 **10 Claims**



1. A pipe union of the banjo type, comprising a body having at least one first bore in which is located a quickfitting connecting member adapted to receive the end of a pipe, said first bore opening into a second bore whose axis is perpendicular to that of the first bore and in which is pivotably mounted a connecting socket having a conduit in communication through at least one orifice with the first bore, said socket having a recess in which are engaged jaws of a flexible clip mounted in a collar secured in a supporting member, said collar having a diverging zone, disposed towards the interior of the union, for squeezing together the jaws of the clip and a toroidal seal preventing leakage from said socket and the union.

3,967,839

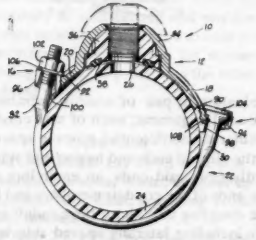
PIPE SADDLE ASSEMBLY

Paul George Dunmire, Sonoma, Calif., assignor to Johns-Manville Corporation, Denver, Colo.

Filed May 28, 1974, Ser. No. 473,962

Int. Cl.² F16L *41/06*

U.S. Cl. 285—199 **12 Claims**



1. A pipe saddle assembly, comprising:

a. an insert housing having an outer open end and an inner open end, the inner open end being adapted for positioning adjacent to and around an opening in the wall of a pipe;

b. an insert having an outer end, an opposite inner end and an opening extending through the insert from its inner end to its outer end, said insert being positioned in a predetermined way within said housing such that the inner ends and the outer ends of said insert and housing are respectively adjacent each other;

c. said housing including an inwardly facing internal shouldered surface and said insert including a complementary, outwardly facing, external shouldered surface which slidably abuts against said internal shouldered surface when said insert is positioned within said housing in said predetermined way, said shouldered surfaces respectively defining segments of a spherical surface;

d. circumferential sealing means positioned adjacent the inner end of said insert around the opening therein and being adapted to engage against said pipe wall around the opening in said pipe wall; and

e. means for holding said housing, insert and sealing means in position against said pipe.

3,967,840

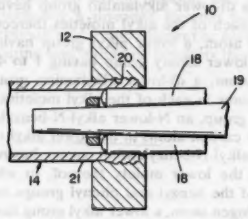
JOINT AND PROCESS FOR FORMING SAME

Robert A. McFall, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 13, 1975, Ser. No. 558,197

Int. Cl.² F16L *41/00*

U.S. Cl. 285—222 **9 Claims**



1. In a process for forming a tubing-machined metallic member joint comprising providing a metallic member of substantially full theoretical density having a portion thereof adapted to matingly receive a metallic tube, placing one end of said tube against said mating portion of said metallic member, said tube being formulated of a less hard metal than said member, and cold flowing said one end of said tube against said mating portion thereby forming said joint, the improvement of increasing the torque strength of said joint comprising:

controllably oxidizing only said member at an elevated temperature prior to the placing of said tube in mating contact with said mating portion to form a thin adherent hard metal oxide layer on said mating portion; and

cooling said member after completion of said oxidizing.

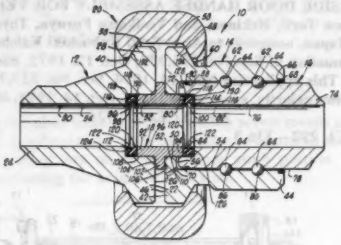
9. A tubing-machined metal joint formulated by providing a metallic member of substantially full theoretical density having a portion thereof adapted to matingly receive a metallic tube formulated of a less hard metal than said member, controllably oxidizing only said member at an elevated temperature prior to the placing of said tube in mating contact with said mating portion to form a thin adherent hard metal oxide layer on said mating portion, placing one end of said tube against said mating portion of said metallic member and cold flowing said one end of said tube against said mating portion thereby forming said joint of increased torque strength.

3,967,841

HIGH PRESSURE TUBULAR SWIVEL JOINT

William D. Kendrick, Duncan, Okla., and Bruce J. Frazier, Coffeyville, Kans., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 22, 1975, Ser. No. 615,797
Int. Cl.[2] F16L 27/00
U.S. Cl. 285—276 19 Claims



1. A swivel joint comprising:

a first swivel body having a first end, said first swivel body having an end face on the first end thereof, and a passage extending through said first swivel body communicating with the first end;

a second swivel body having a first end and a second end, said second swivel body having an end face on the first end thereof, and a passage extending through said second swivel body communicating the first and second ends, said passage including a cylindrical inner surface;

a third swivel body having a first end and having a passage extending therethrough communicating with the first end thereof, and a cylindrical outer surface, said third swivel body being disposed within the cylindrical inner surface of said second swivel body, said passage through said third swivel body including: a first cylindrical inner surface communicating with the first end of the third swivel body; a second inner surface having a diameter less than the diameter of the first cylindrical inner surface; and a shoulder extending between the first and second inner surfaces;

a sleeve having a first end and a second end and a passage extending therethrough communicating the first and second ends, said sleeve including: a first cylindrical outer surface communicating with the first end of said sleeve and received within the passage through said first swivel body; a second cylindrical outer surface communicating with the second end of said sleeve; a first end face formed on the first end of said sleeve; and a second end face formed on the second end of said sleeve with the second end of said sleeve extending into the first cylindrical inner surface of said third swivel body;

static annular seal means disposed intermediate the first end of said sleeve and the passage through said first swivel body for providing a fluid-tight seal between said sleeve and said first swivel body;

dynamic annular seal means disposed intermediate the second end face of said sleeve and the first cylindrical inner surface and the shoulder of the passage extending through said third swivel body for providing a sliding fluid-tight seal between said sleeve and said third swivel body;

rotary bearing means disposed intermediate the cylindrical outer surface of said third swivel body and the cylindrical inner surface of said second swivel body for journally supporting said third swivel body within said second swivel body for rotation about the axis of the cylindrical inner surface of said second swivel body; and

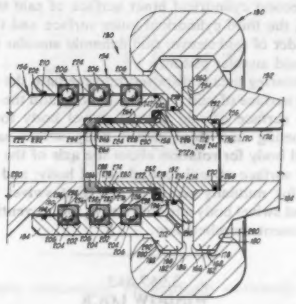
means for mutually securing said first swivel body, said second swivel body and said sleeve for preventing relative movement therebetween.

3,967,842

HIGH PRESSURE TUBULAR SWIVEL JOINT

William D. Kendrick, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sept. 22, 1975, Ser. No. 615,791
Int. Cl.[2] F16L 27/00
U.S. Cl. 285—276 20 Claims



1. A swivel joint comprising:

a first swivel body having a first end, said first swivel body having an end face on the first end thereof, and a passage extending through said first swivel body communicating with the first end thereof;

a second swivel body having a first end and a second end, said second swivel body having an end face on the first end thereof, and a passage extending through said second swivel body communicating the first and second ends, said passage including a cylindrical inner surface;

a third swivel body having a first end and having a passage extending therethrough communicating with the first end thereof, and a cylindrical outer surface, the cylindrical outer surface of said third swivel body being disposed within the cylindrical inner surface of said second swivel body, said passage through said third swivel body including a first cylindrical inner surface communicating with the first end of said third swivel body, a second cylindrical inner surface having a diameter less than the diameter of the first cylindrical inner surface, a first annular shoulder extending between the first and second cylindrical inner surfaces, a third inner surface having a diameter less than the diameter of the second cylindrical inner surface, and a second annular shoulder extending between the second cylindrical inner surface and the third inner surface;

a sleeve having a first end and a second end and a passage extending therethrough communicating the first and second ends, said sleeve including: a first cylindrical outer surface communicating with the first end of said sleeve and received within the passage through said first swivel body; a second cylindrical outer surface intermediate the first cylindrical outer surface and the second end of said sleeve; a radially inwardly extending annular shoulder communicating with the second cylindrical outer surface of said sleeve; a third cylindrical outer surface extending from the annular shoulder to the second end of said sleeve; a first end face on the first end of said sleeve; and a second end face on the second end of said sleeve; the second cylindrical outer surface of said sleeve extending within the first cylindrical inner surface of said third swivel body and the third cylindrical outer surface of said sleeve extending within the second cylindrical inner surface of said third swivel body;

static annular seal means disposed intermediate the first end of said sleeve and the passage through said first swivel body for providing a fluid-tight seal therebetween;

dynamic annular seal means disposed intermediate the annular shoulder of said sleeve and the first cylindrical inner surface and the first annular shoulder of said third swivel body for providing a sliding, fluid-tight seal between said sleeve and said third swivel body;

an annular piston positioned in mutual sliding sealing engagement between the second cylindrical inner surface of said third swivel body and the third cylindrical outer surface of said sleeve;

a quantity of fluid disposed in the annular space defined by the second cylindrical inner surface of said third swivel body, the third cylindrical outer surface and the annular shoulder of said sleeve, said dynamic annular seal means and said annular piston;

rotary bearing means disposed intermediate the cylindrical outer surface of said third swivel body and the cylindrical inner surface of said second swivel body for journally supporting said third swivel body within said second swivel body for rotation about the axis of the cylindrical inner surface of said second swivel body; and

means for mutually securing said first swivel body, said second swivel body and said sleeve for preventing relative movement therebetween.

3,967,843

WINDOW LOCK

Frank M. Hart, 740 Clayton St., Denver, Colo. 80206

Filed Nov. 22, 1974, Ser. No. 526,090

Int. Cl.² E05C *17/30*

U.S. Cl. 292—273 **1 Claim**

1. A window lock for frame-mounted double-hung windows to hold the lower and upper windows in closed and in adjusted open positions one with respect to the other comprising a first elongated element secured to the lower window, a second elongated element secured to the upper window, said first and second elements being cooperatively formed and arranged whereby one element is telescopically received in the other for conjoint movement to retracted and extended positions as the windows are moved to open and closed positions, respectively, a latch assembly for said window lock mounted on one of said telescoping elements, a latch plunger for said latch assembly, a resilient member engaging said plunger and biasing the latch plunger for movement toward the other of said telescoping elements, said other telescoping element providing a plurality of catches at longitudinally spaced positions therealong for the selective reception of said latch plunger whereby the windows are selectively held in desired relative positions one with respect to the other in the frame, an anchor plate secured to said upper window, a threaded screw for engagement with said anchor plate for selectively securing the second elongated element to the upper surface of the meeting rail for said bottom window, means interconnecting the first elongated element to said pivot plate, and a pivot bolt engaging said pivot plate and the first elongated element with the axis of said bolt arranged transversely with respect to said meeting rail whereby the telescoping first and second elements may be moved pivotally about said pivot bolt to a position disposed along the meeting rail for the bottom window when the threaded screw is removed from said anchor plate.

3,967,844

OUTSIDE DOOR HANDLE ASSEMBLY FOR VEHICLES

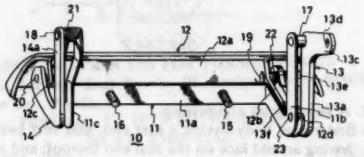
Nozomu Torii, Hekinan, and Yosikatsu Furuya, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 296,970, Oct. 12, 1972, abandoned. This application Nov. 14, 1974, Ser. No. 523,744

Claims priority, application Japan, Oct. 14, 1971, 46-81209

Int. Cl.² E05C *3/26*

U.S. Cl. 292—336.3 **6 Claims**



1. An outside door handle assembly for actuating a door latch mechanism of vehicle doors, comprising:

a base member having a pair of arms being secured to the vehicle door;

a pair of levers respectively being pivotally mounted upon said pair of arms, one of said levers being operably connected to said door latch mechanism;

a manually operable main door handle pivotally mounted upon said pair of levers;

biasing means constantly biasing said main door handle so as to maintain said main door handle in a normal non-operative position;

locking means normally locking the pivotal movement of said levers and said latch mechanism, said locking means releasing said levers and said latch mechanism only when said main door handle is initially rotated from said normal non-operative position in a door opening direction; and

means for relatively non-pivotally engaging said main door handle with said one of said pair of levers upon a further door opening rotation of said main door handle, whereby said main door handle and said pair of levers are rotatable as a unit about the pivotal mounting point of said levers on said pair of arms for unlatching the door latch mechanism.

3,967,845

REINFORCED STRIKER ASSEMBLY FOR DOOR LOCKS

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

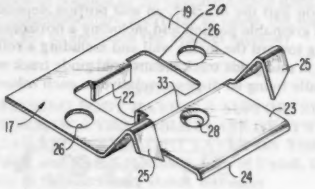
Filed Oct. 21, 1974, Ser. No. 516,485

Int. Cl.² E05C *1/00*

U.S. Cl. 292—340 **8 Claims**

1. Means to resist forceable entry through a bolted door which is swingable with relation to a fixed surrounding door frame having a bolt receiving socket and an adjacent striker plate recess, said means comprising a reinforcement plate disposed in the bottom of said recess and having a pair of opposed anchor tabs projecting into said socket and engaging the forward and rear walls thereof, prongs on said reinforcement plate rearward of said tabs and being driven into a door jamb rearward of said socket to further anchor the reinforcement plate, and a conventional striker plate mounted on the

outer face of said reinforcement plate and each having a bolt receiving opening in registry with the bolt socket, the conventional striker plate covering and substantially concealing the



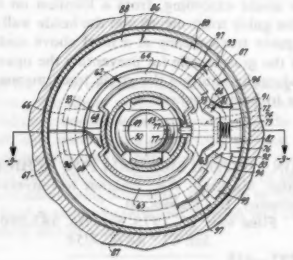
reinforcement plate from view, and anchor screw means common to the reinforcement plate and said conventional striker plate penetrating into an adjacent door jamb portion, and further penetrating the adjacent wall stud.

3,967,846

LOCK

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Apr. 8, 1974, Ser. No. 458,532
Int. Cl.² E05B *13/00, 13/10, 47/04*
U.S. Cl. 292—359 **6 Claims**



1. A lock having a frame, a knob spindle mounted on said frame for rotation about an axis, means for preventing said rotation of said spindle including a pin movable on said frame in a direction radial to said axis between a first position holding said spindle against rotation relative to said frame and a second position freeing said spindle from said frame, a spring urging said pin toward one of said positions, an electromagnet substantially arcuate in shape and having a pole positioned to urge said pin against said spring and for urging said pin toward the other of said positions, and means mounting said electromagnet on said frame coaxially around said spindle.

3,967,847

CHUCK APPARATUS FOR GLASS CONTAINER COATING LINE

Warren L. Ellis, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Sept. 15, 1975, Ser. No. 613,617
Int. Cl.² B66C *1/42*
U.S. Cl. 294—116 **8 Claims**

1. An apparatus for suspending a container by a finish portion thereof, wherein the finish portion is gripped by a chuck having jaws mounted to a chuck body and engageable under a rib on said finish portion, said body is carried on a spindle, and wherein said chuck includes a sleeve slidable axially along said spindle to engage the jaws and secure them in radially gripping engagement with said finish portion,

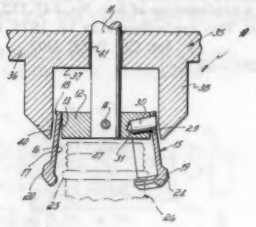
the improvement wherein,

the chuck body is in the form of a disk having a sidewall,

the jaws are substantially arcuate segments each having an inwardly facing surface whose configuration approximates that of said sidewall,

each said jaw being carried on a pin projecting radially outwardly from the sidewall of said body, the pin passing through an oversize radial hole in the respective jaw and terminating centrally of the sleeve,

each said jaw having an inwardly facing lip for supporting said container by engagement under said rib thereon, each said jaw also having an outwardly facing cam surface



which lies substantially diametrically outwardly of said lip,

a cam on said sleeve engageable with the cam surfaces of said jaws to cam the jaws inwardly,

clearance in the direction parallel to said spindle being provided between said sleeve and body such that in use said sleeve can engage the jaws only and not the body, the entire weight of said sleeve thereby being applied to said jaws through the said cam surfaces thereof,

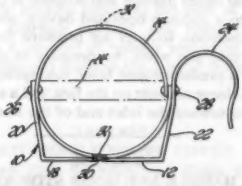
the dimension of said clearance being sufficient that, when wear of said jaws occurs in use, the wear is accommodated without loss of grip by greater axial movement of the sleeve relative to the jaws.

3,967,848

FOLDING HANDLE FOR CUPS, CANS AND OTHER USES

Niles M. Sowle, 1156 Herbert J, Jackson, Mich. 49202

Filed June 7, 1973, Ser. No. 367,964
Int. Cl.² A47J *45/06;* **B65D** *25/28*
U.S. Cl. 294—31.2 **4 Claims**



1. A folding handle for hand held beverage cups, containers and the like, and comprising; a frame member including a U-shaped strap having a bottom portion and relatively spaced upturned ends, a finger receptive handle loop provided on one of said upturned ends, and an annular ring pivotally engaged at diametrically opposite sides to said upturned ends for being disposed transversely of said frame member for use in receiving a beverage container therewithin and supported on said bottom frame portion and for being disposed in relative alignment with said frame member and in combination therewith being sized for compact storage and ready accessibility within a shirt pocket or the like, said annular ring including semi-

annular halves pivotally engaged together and to said upturned frame ends for being relatively brought together and folded one within the other, and said handle loop being pivotally engaged to said one upturned frame end for being relatively turned from an outwardly disposed position to an inwardly disposed position relatively over said semi-annular ring halves as folded together.

3,967,849

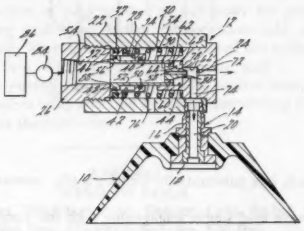
VACUUM CONTROL SYSTEM

Harlan R. Cagle, Clarkston, Mich., assignor to Sahlin International, Inc., Birmingham, Mich.

Continuation of Ser. No. 369,861, June 14, 1973, abandoned, which is a continuation of Ser. No. 147,322, May 27, 1971, abandoned. This application May 14, 1975, Ser. No. 577,407

Int. Cl.² B66C 1/02

U.S. Cl. 294—64 A **7 Claims**



1. A vacuum control unit comprising a housing having an air inlet passage at one end and an air outlet passage at the other end, a first sleeve slidably supported in said housing for movement relative to said outlet passage and having an open end communicating with said inlet passage so that incoming air is received within the sleeve, said sleeve having adjacent transverse wall means in the outlet end of the housing, said wall means including aperture means for the passage of air into the outlet passage, means providing a fixed seat for the sleeve around the opening into the outlet passage, said aperture means and said outlet passage being shaped and disposed so that the passage of air under pressure from said air inlet passage through said sleeve and aperture means to said outlet passage holds the sleeve on said seat and during seating creates a vacuum at an inner portion of said outlet passage, a passage in said housing opening at one end into said inner portion of said outlet passage and adapted at the other end for connection to a vacuum operated device, and spring means acting in opposition to inlet air pressure for unseating the sleeve from said seat when the pressure of air on the sleeve drops below a predetermined level, said spring means including a second sleeve slidable on the first and a spring urging the second sleeve toward the inlet end of the housing.

3,967,850

GRAB HANDLE AND DOOR STOP ASSEMBLY

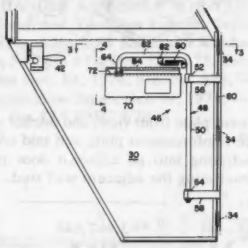
Edwin Lee Whisler, Peosta, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 20, 1974, Ser. No. 534,734

Int. Cl.² B60J 5/04

U.S. Cl. 296—146 **1 Claim**

1. In combination with a vehicle cab including a framework defining a door opening and a door hingedly secured to the framework for swinging movement about a first upright axis between a closed position and an open position relative to said opening, a combined door stop and handle means, comprising: a bracket secured to an inside wall of said door and defining track means extending widthwise of said door; a grab handle pivotally mounted on said framework for movement about a second upright axis; said grab handle including a hand grippable portion traversing said first upright axis and located further away from the inside wall of said door than the bracket and extending in general parallelism to the guide track means and elevated above the bracket a distance sufficient to permit easy insertion of an operator's hand between the hand grippable portion and the bracket; an end portion depending from the hand grippable portion and including a horizontal portion extending toward the inside wall and including a roller means received in said guide track means; said guide track means and grab handle being so disposed relative to each other that said



roller means travels between first and second locations in said guide track means when said door is moved from its closed to its open position, detent means located at said second location in said guide track means for frictionally resisting initial movement of said door from its open to its closed position and a protective shield extending, from a location on the bracket between the guide track means and the inside wall of the door over the guide track means at a level above said horizontal portion of the grab handle for preventing the operator's hand from accidentally entering the guide track means where it is vulnerable to being pinched.

3,967,851

PUSH-ON PIVOTED SIDE ARM FOR VEHICLE SEAT

Paul G. Stier, Muskego, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 27, 1975, Ser. No. 583,090

Int. Cl.² A47C 7/54

U.S. Cl. 297—416 **8 Claims**

1. In combination, a seat frame member including at least one apertured side arm member mounting bracket; at least one side arm member including pin mounting means supporting a plurality of transversely spaced mounting pins positioned in corresponding transversely spaced parallel apertures in the mounting bracket; a first mounting pin being attached to a rigid portion of said pin mounting means; a second mounting pin having a base end carried by a resilient portion of the pin mounting means, the axis of said second mounting pin being normally skewed relative to the axis of said first mounting pin; and a third mounting pin whose axis is parallel to the axis of the first pin, said third pin having a tapered lead end which is sufficiently tapered that it can engage a side edge of a complementary aperture in the mounting bracket on the seat frame

whereby application of axial force to said pins during assembly will initially cause said second mounting pin to become parallel to said first and third pins as a leading untapered portion of the third pin passes through said mounting bracket, the force of said resilient portion causing the second pin to reassume its skewed position as the pins are moved sufficiently far into their complementary apertures to cause the base end of the second pin to approach the bracket member.

3,967,852

UPHOLSTERING BODY HAVING A SUPPORTED CORE IN THE FORM OF A YIELDABLE PLATE OF SYNTHETIC MATERIAL AND A RESILIENT LAYER ON THE CORE

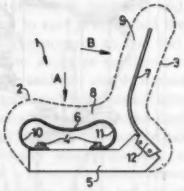
Günter Eiselt, and Rudolf Hossbach, both of Unkel, Germany, assignors to Günter Eiselt, Unkel, Germany

Division of Ser. No. 377,735, July 9, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 553,258

Claims priority, application Germany, July 7, 1972, 2233389; Oct. 13, 1972, 2250249

Int. Cl.² A47C 7/02

U.S. Cl. 297—452 **19 Claims**



1. A body for use in upholstering and comprising in combination: a layer of resilient material forming the outer part of the body, and core means supportingly engaging the inner side of said layer, said core means comprising at least one sheet exclusively of continuous synthetic material, said sheet including means for anchoring the sheet to the frame of an article of furniture, said sheet being resiliently yieldable in the direction in which a load is normally imposed thereon and being resistant to yielding also in other directions.

3,967,853

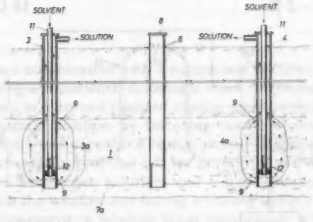
PRODUCING SHALE OIL FROM A CAVITY-SURROUNDED CENTRAL WELL

Philip J. Closmann, and Min Jack Tham, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed June 5, 1975, Ser. No. 584,100

Int. Cl.² E21B 43/24, 43/28

U.S. Cl. 299—4 **4 Claims**



1. A process for producing shale oil from a subterranean oil shale which contains or is contiguous with an areally extensive layer of water-soluble mineral, which process comprises:

forming a plurality of cavities in horizontally-spaced locations surrounding a central well;

casing or lining the borehole of the central well in a manner that restricts the rubbling or disaggregating of earth formations that form the wall of the borehole;

solution-mining portions of the areally extensive layer of water-soluble mineral to form a generally horizontal, substantially solids-free passageway that interconnects the cavities and the central well; and

circulating hot fluid into the cavities, through the passageway interconnecting the cavities with the central well, and out through the central well to recover shale oil.

3,967,854

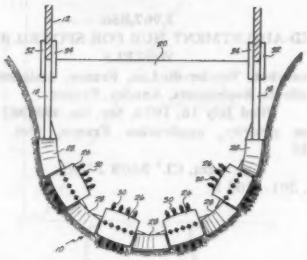
ENDLESS BUCKET TYPE EXCAVATOR

Charles L. Posciri, S.R. Box L1620 Clark R., Palmer, Alaska 99645

Filed Nov. 7, 1974, Ser. No. 521,583

Int. Cl.² E21C 25/10, 27/30

U.S. Cl. 299—40 **8 Claims**



1. An endless bucket type excavator comprising:

an endless chain of buckets supported for tangential entry into ground to be excavated, each said bucket having a transverse leading portion characterized by roller cutter means alternating with scoop teeth, with scoop teeth on alternate buckets following the path of roller cutter means on intermediate buckets, and with scoop teeth on intermediate buckets following the path of roller cutter means on alternate buckets, said roller cutter means comprising a plurality of radially extending teeth which penetrate into and fracture the ground material.

3,967,855

AUTOMOBILE WHEEL COVER

Odeun J. Johnson, 1200 S. Cester, Park Ridge, Ill. 60068

Filed July 28, 1975, Ser. No. 599,528

Int. Cl.² B60B 7/00

U.S. Cl. 301—37 R **8 Claims**

1. An ornamental cover for a wheel of an automotive vehicle, comprising

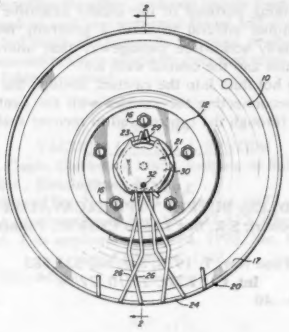
a circular member having a cup-shaped central portion and a planar annular peripheral portion,

said member having an intermediate annular planar portion provided with a plurality of spaced holes for receiving the bolts on which said wheel is mounted,

said planar portion being deformed inwardly around each of said holes,

said member being provided with an internally threaded axial hole, and

a screw member threaded into said axial hole,
said screw member having a head having a minimum cross-



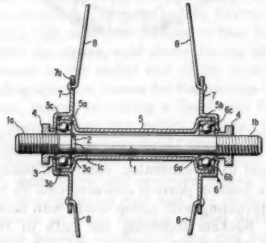
wise dimension not substantially less than the external diameter of said cup-shaped central portion.

3,967,856

FIXED-ADJUSTMENT HUB FOR SPOKED BICYCLE WHEELS

Jean Beauchet, Veyrier-du-Lac, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed July 16, 1974, Ser. No. 488,982
Claims priority, application France, Oct. 10, 1973, 73.36255
Int. Cl.² B60B 27/00
U.S. Cl. 301—105 B 5 Claims



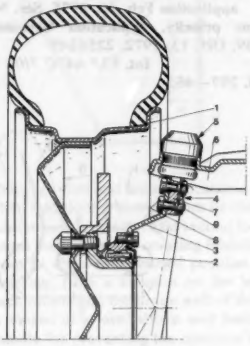
1. A fixed-adjustment hub for spoked bicycle wheels comprising:
two outer flanges on which the spokes are hooked;
an axle threaded at the two ends thereof;
two bearings disposed about said axle near said two threaded ends thereof for mounting the wheel on a bicycle;
a cylindrical crosspiece containing said threaded axle and said two bearings, the latter of which are disposed within diametrically expanded portions of the two ends of said cylindrical crosspiece;
the assembly formed by said crosspiece and said two bearings being held between said two flanges by the tension of the spokes;
at least one of the inner races of said bearings being held, so as not to slide on said threaded axle, between a retaining ring and a first nut for mounting said wheel upon said bicycle, while the second one of said bearings can slide upon a smooth part of said axle;
a second nut, for also mounting said wheel upon said bicycle, being screwed to the base of the threads of said axle to within a certain distance from the inner race of said second bearing; and
said outer bearing races being interposed between said flanges and said diametrically expanded portions of said crosspiece.

3,967,857

SPINDLE FOR A VEHICLE WHEEL, PROVIDED WITH AT LEAST ONE BALL JOINT

Sture L. Asberg, Partille, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Oct. 7, 1974, Ser. No. 512,513
Claims priority, application Sweden, Oct. 18, 1973, 7314189
Int. Cl.² B60B 35/00
U.S. Cl. 301—125 12 Claims



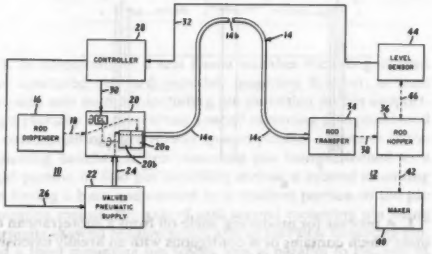
1. In a suspension system for the wheel of a vehicle of the type having a steering spindle articulated at a joint with a further member; the improvement wherein said spindle comprises a pressed sheet metal member, one of said spindle and further member having a substantially flat portion, a ball joint member having a ball and a plate-shaped means depending therefrom, means for affixing said plate-shaped means to said substantially flat portion, and means for connecting said ball to the other of said sheet metal member and further member to form an articulated joint.

3,967,858

CIGARETTE FILTER ROD TRANSFER APPARATUS

Charles Gary Atwell, Mechanicsville; Gilbert W. Tew, Richmond; Gerald A. Kraft, Richmond, and Joseph A. Faries, Jr., Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,907
Int. Cl.² B65G 51/02
U.S. Cl. 302—2 R 18 Claims



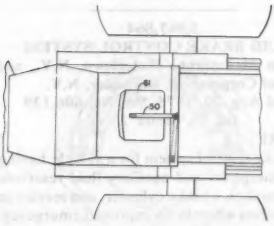
13. A system for transporting cigarette rods from a first rod supply location to a second cigarette maker location, comprising:

a. conduit means extending from said first location to said second location;
b. pneumatic source means having an outlet and energizable to supply pressurized air to said outlet;
c. rod supply means at said first location defining a passage between said pneumatic source means outlet and said conduit means and energizable to supply individual rods to said passage;
d. rod receiver means at said second location for receiving rods conveyed through said conduit and having an outlet, said rod receiver means including first conveyor means issuing rods sequentially therefrom at said outlet;
e. rod hopper means at said second location comprising first and second separable vertically-stacked hoppers, said first hopper having a sideward inlet for receiving rods issuing sequentially from said rod receiver means outlet, second conveyor means for conveying rods from said sideward inlet to the interior of said first hopper and a downward outlet for transferring said rods to cigarette making machinery, said rod hopper means generating a first output signal upon containment of rods in said first and second hoppers in quantity less than a preselected rod quantity and generating a second output signal upon containment of rods in said first and second hoppers in quantity equal to said preselected rod quantity;
f. control means responsive to said rod hopper means first output signal to energize said pneumatic source means and to energize said rod supply means upon expiration of a first predetermined time period after such energization of said pneumatic source means and responsive to said second output signal to deenergize said rod supply means and to deenergize said pneumatic source means upon expiration of a second predetermined time period after such deenergization of said rod supply means.

3,967,859
VANDAL LATCH FOR PREVENTING REMOVAL OF A POP-OUT TYPE VEHICLE WINDOW

Edwin Lee Whisler, Peosta, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 5, 1975, Ser. No. 574,582
Int. Cl.² B62D *25/00*
U.S. Cl. 296—28 C **4 Claims**

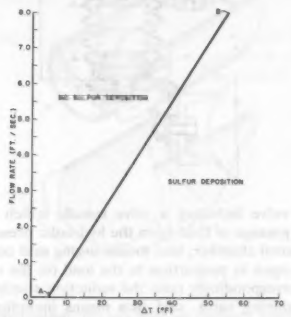


1. In a combination with a completely enclosed vehicle cab including a framework defining a window opening, a window disposed in a normal position closing said opening and held in said normal position by fastening means connected to the framework and capable of being forcibly distorted by a person located exteriorly of the cab for permitting movement of the window to an open position, and a seat mounted in the cab adjacent the window and having a seating surface for supporting an operator, a window latch comprising: a first locking part means movably mounted on one of said framework and window for movement between latched and stored positions, a second locking part means mounted on a different one of said framework and window than said first locking part is mounted, said first and second locking part means respectively including first and second cooperating means for establishing a connection between the framework and window when the first part means is in its latched position for preventing movement of the window to its open position, and for becoming disconnected for permitting opening of the window when the first part means is moved from its latched to its stored position; and said first part means including a portion so located relative to the seat that it prevents an operator from sitting on the seating surface only when the first part means is in said latched position.

3,967,860
METHOD OF TRANSPORTING A SULFUR-HYDROCARBON SLURRY IN A PIPELINE

Anthony G. Fonseca, and Richard L. Every, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 2, 1972, Ser. No. 303,300
Int. Cl.² B65G *53/30*
U.S. Cl. 302—66 **8 Claims**



1. In a method for transporting sulfur in a pipeline by forming a pumpable slurry of said sulfur and a carrier fluid, pumping said slurry through said pipeline, in order to inhibit the plating on the walls of said pipeline of nascent sulfur from said slurry while in transit due to the solubility differences caused by the temperature differential (ΔT) between said slurry and said pipeline, the improvement comprises maintaining the flow rate of said slurry to at least about the value given by the equation:

$$\text{flow rate (ft/sec)} = 0.16\,[\Delta T(°F) - 5]$$

when the flow rate is below 8.0 feet per second.

4. In a method for transporting sulfur in a pipeline by forming a pumpable slurry of said sulfur and a carrier fluid, pumping said slurry through said pipeline, in order to inhibit the plating on the walls of said pipeline of nascent sulfur from said slurry while in transit, the improvement comprises maintaining said pipeline at a temperature of no more than 5°F below the temperature of said slurry.

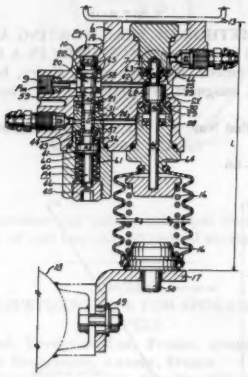
3,967,861
FLUID PRESSURE REGULATING VALVE FOR VEHICLE BRAKING SYSTEMS

Hiroaki Nagara, Kobe, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 5, 1975, Ser. No. 574,267
Claims priority, application Japan, May 10, 1974, 49-52732; Nov. 8, 1974, 49-129277; Nov. 8, 1974, 49-135859[U]
Int. Cl.² B60T *8/18, 8/26*
U.S. Cl. 303—6 C **5 Claims**

1. A load-responsive reducing valve for the rear wheel brake system of a vehicle comprising a reducing valve having a valve plunger therein operated in cooperation with a valve

seat by the difference in area between the plunger surfaces receiving hydraulic pressure from a hydraulic pressure source and from a rear wheel brake respectively to open and close the passage of braking fluid from the hydraulic pressure source to the rear wheel and a control chamber operable to store a controlling pressure for pressing said plunger in the direction to open said plunger from said valve seat and to control the starting pressure of the reducing operation of said reducing valve in response to the load on the vehicle, characterized by



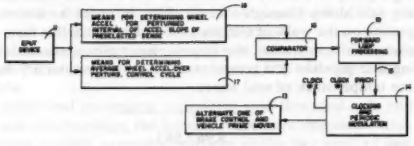
a control valve including a valve spindle which opens and closes the passage of fluid from the hydraulic pressure source to said control chamber, bias means urging said control valve to remain open in proportion to the load on the vehicle and thereby correspondingly raise the reduction starting pressure of said reducing valve, said bias means including a spring urged in response to the load on the vehicle and in turn urging said spindle in the direction required to open said control valve in response to the load on the vehicle.

3,967,862

ANTI-SKID CONTROL SYSTEM EMPLOYING INTEGRAL-PLUS-PROPORTIONAL CONTROL OF PULSED MODULATION

Gordon E. Hunter; James E. Rau, both of Anaheim, and Rogell Van Wyk, Brea, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 17, 1975, Ser. No. 559,100
Int. Cl.[2] B60T 8/02
U.S. Cl. 303—21 P **14 Claims**



1. In an anti-skid type control system for wheeled vehicles having both braked wheels and a prime mover for applying an accelerating torque to said wheels, apparatus for maintaining wheel slip (s) in a region of values associated with a maximum coefficient of road friction μ, comprising

first means for determining the variation of the coefficient of friction from a maximum value and including pulse modulation means for periodically increasing and decreasing alternately an alternative one of a braking action and accelerating torque; and

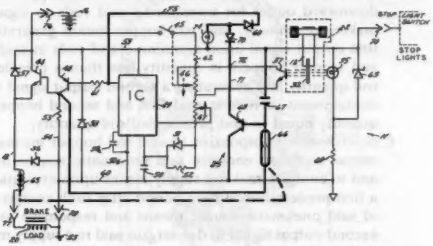
second means responsive to said first means for changing said alternative one of an applied braking action and an applied accelerating torque in such sense as to increase said coefficient of friction and including integral-plus-proportional control means for both applying the pulse modulation of said pulse modulation means and biasing the average system acceleration condition about which such modulation is applied, said modulation being varied in a sense to maximize said coefficient of friction.

3,967,863

BRAKE CONTROLLER AND SHORT CIRCUIT PROBE DISCONNECT

Jerry J. Tomecek, Milford, and Philip J. Hagerty, Marshall, both of Mich., assignors to Tekonsha Engineering Company, Tekonsha, Mich.

Filed Dec. 9, 1974, Ser. No. 531,171
Int. Cl.[2] B60T 8/16
U.S. Cl. 303—24 C **3 Claims**



1. A brake control system for brakes in towed vehicles and connected to a source of electrical energy comprising:

a light sensitive monitor;

inertially operated and adjustably positioned dampened cantilever beam attenuating light to said monitor;

a pulsed power circuit controlled by said monitor, said circuit transmitting upon actuation a constant width pulse at a frequency proportional to the amount of attenuation of the sensed light as determined by said inertially operated beam; and

brakes in a towed vehicle operably connected to said pulsed power circuit.

3,967,864

FLUID BRAKE CONTROL SYSTEM

Eugene Douglas McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 20, 1975, Ser. No. 606,139
Int. Cl.[2] B60T 15/44
U.S. Cl. 303—81 **7 Claims**

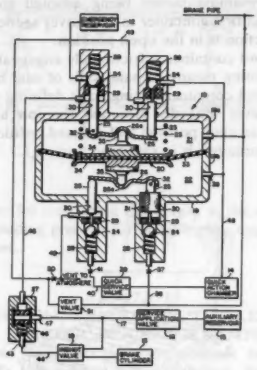
1. A fluid brake control system for a vehicle having a brake control pipe, emergency and auxiliary fluid reservoirs, a first quick action chamber, a brake cylinder, and service and emergency control valves wherein an improved emergency application and stability control device is provided comprising;

a. a housing containing a differential abutment subject to actuation axially by differences in fluid pressures in brake pipe pressure and quick action control pressure chambers on opposite sides of the abutment,

b. at least one poppet type valve means disposed in the housing on each of said opposite sides of the abutment and located partly in each of said brake pipe pressure chamber and said quick action control pressure chamber spring biased toward a closed position and having an operating push rod longitudinally disposed between the associated valve means and the abutment,

c. the poppet valve means on one side of the abutment being opened by movement of the abutment in one direction and having means for permitting application of fluid from the emergency reservoir to the brake cylinder when this valve is opened,

d. the poppet valve means on the other side of the abutment being opened by movement of the abutment in the opposite direction and having means to permit charging of the first quick action chamber at a controlled rate from the brake pipe when this valve is opened, and



e. a stabilizing spring in the brake pipe pressure chamber biasing the abutment in a direction to normally open the poppet valve means on the other side of the abutment.

3,967,865

BALL BOX

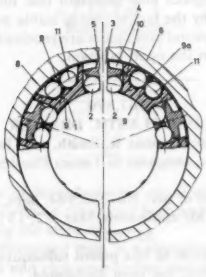
Lothar Walter, Schweinfurt; Erich Burkl, Stammheim; Rainer Schürger, Schwanfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Oct. 30, 1974, Ser. No. 519,336

Claims priority, application Germany, Dec. 21, 1973, 7345379[U]

Int. Cl.² F16C *29/06*

U.S. Cl. 308—6 C **4 Claims**



1. A ball box adapted to be mounted in a housing and having a load zone and a load-free zone for the recirculation of balls, comprising a plurality of continuous ball races formed by a cage, said ball races having a plurality of adjacent, axially directed return channels provided pairwise in said load-free zone, and the balls in said ball races, said return channels being separated from each other in said pairs by axially directed cross-pieces, the width of each said cross-piece, measured in the circumferential direction, being zero at the level of the ball pitch circle, said cross-pieces being positioned to inhibit contact of balls in adjacent return channels, thereby providing a minimum separation of the return channels while preventing contact of the balls of adjacent ball races.

3,967,866

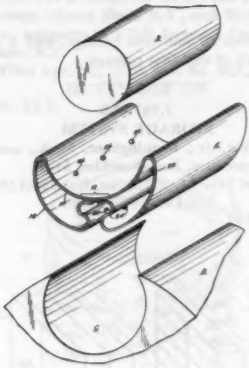
ANTI-FRICTION PRESSURE SEAL

William A. Cohen, Brooklyn, N.Y., assignor to Sphero International Company, West Long Branch, N.J.

Filed June 9, 1975, Ser. No. 584,770

Int. Cl.² F16C *19/04, 33/64*

U.S. Cl. 308—187.1 **16 Claims**



1. In combination, for use with an element having a cavity therein, a roller bearing at least partially received within said cavity and a spring deformable to be inserted within said cavity between said roller bearing and the walls of said cavity, said spring comprising a first part surrounding at least substantially half of the circumference of said roller bearing, said first part, when said spring is inserted into said cavity, contacting said roller bearing, substantially at only a single location between but not including said end sections thereof, substantially all other portions of said first part between but not including the end sections thereof being spaced from said roller bearing, a second part spaced from said first part and adjacent the wall of said cavity when said spring is inserted in the said cavity, and resilient means extending between said first and said second parts in the vicinity of said location in order to maintain the spacing between said parts.

3,967,867

ROLLER BEARINGS

John K. Richardson, Hedon, England, assignor to Priestman Brothers Limited, Hull, England

Filed Jan. 7, 1975, Ser. No. 539,140

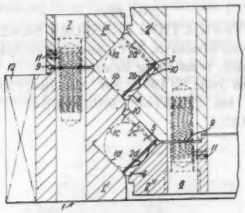
Claims priority, application United Kingdom, Feb. 4, 1974, 5049/74

Int. Cl.² F16C *27/04*

U.S. Cl. 308—207 R **6 Claims**

1. A bearing assembly comprising: inner and outer bearing rings defining two axially spaced, coaxial, annular, quadrangular-sectioned passages between them, and a plurality of rollers retained in said annular passages, some of said rollers having axes which are inclined at a first angle to the axis of said bearing assembly and others of said rollers having axes which are inclined at substantially said first angle to said axis, but in an opposite sense, said inner bearing ring comprising a first part forming two sides of a first of said passages and one side of the second of said passages, and a second part forming one

side of said second passageway, and said outer bearing ring comprising a first part forming two sides of said second pas-



sage and one side of said first passage, and a second part forming one side of said first passage.

3,967,868

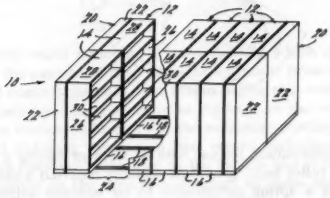
STORAGE SYSTEM

Edward A. Baker, Jr., Birmingham, Mich., assignor to E. Baker and Associates, Inc., Franklin, Mich.

Filed Feb. 14, 1975, Ser. No. 550,129

Int. Cl.² A47B *53/00*

U.S. Cl. 312—201 **22 Claims**



1. A storage system including at least one storage unit, means supporting said unit for movement between spaced apart locations and including:

a base structure having first and second pairs of rollers,

a pair of relatively flexible track members matingly associated with said storage unit and adapted to have said rollers of the base structure supported upon and guided thereby,

said track members being operatively mounted directly upon and being compliant with and conformable to a relatively irregular surface.

3,967,869

FISHING TACKLE CASE

Elmo Jackson, P.O. Box 138, Orange Grove, Tex. 78372

Filed Nov. 29, 1974, Ser. No. 528,283

Int. Cl.² A47B *51/00*

U.S. Cl. 312—270 **7 Claims**

1. A tackle case comprising:

a. a base section having walls defining an open top receptacle;

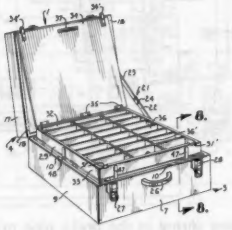
b. a cover section hingedly mounted on said base section and movable between an open position and a closed position, said cover section having walls defining a receptacle;

c. a first container selectively removably received in one of said base section and said cover section, said container having walls defining a receptacle and a cover hingedly mounted thereon and movable between an open position and a closed position;

d. a second container receivable in said base section in underlying relation to said first container when said first container and second container are positioned in said base section;

e. first and second retaining means mounted on said walls of said base section and on said walls of said cover section respectively and extending inwardly therefrom and each operative to frictionally engage said containers in the respective said base section and said cover section, said second retaining means being adapted to frictionally retain said first container in said cover section when said cover section is in the open position;

f. said second container is frictionally engageable with said first retaining means on said walls of said base section, said second container having walls defining a receptacle and a cover hingedly mounted thereon and movable between an open position and a closed position while said second container is in said base section;



g. a plurality of flat guide means on walls of said second container positioned to be in engagement with the exterior of corresponding walls of said first container when the cover of said second container is in closed position to effect alignment of said first container and said second container and retain said second container connected to the first container when said first container and second container are positioned in said cover section with said cover section in the open position for access to the interior of said base section; and

h. a keeper member extending between said base section and said cover section to retain said cover section in the open position, said keeper member being adapted to limit movement of said cover section through an angle greater than ninety degrees and less than one hundred twenty degrees whereby the tackle case is stable even when said first and said second containers are received in said cover section while in the open position.

3,967,870

MOLDED PLASTIC DRAWER

Thomas S. Noneman; Thomas R. Smith, and John B. Stokes, all of Bryan, Ohio, assignors to Tomco Plastics, Inc., Byron, Ohio

Continuation-in-part of Ser. No. 393,944, Sept. 4, 1973, Pat. No. 3,890,024. This application Mar. 12, 1975, Ser. No. 557,527

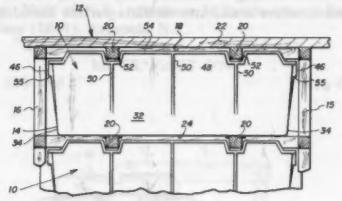
The portion of the term of this patent subsequent to June 17, 1992, has been disclaimed.

Int. Cl.² A47B *88/04*

U.S. Cl. 312—330 SM **10 Claims**

1. A molded plastic drawer for a cabinet having spaced, parallel upper and lower guide rails which comprises a normally horizontal bottom wall including front, side and back edges; guide members formed integrally with and disposed on the underside of the bottom wall, said guide members being positioned adjacent to the back edge and extending forwardly therefrom and being spaced apart to receive the lower guide rails of the cabinet; back and side walls formed integrally with and rising upwardly and slightly outwardly from the back and side edges of the bottom wall; a front wall integrally formed with and rising upwardly from the front edge of the bottom

wall; an outwardly extending lip on the back and side walls and formed integrally therewith, the lip of the back wall being positioned above the lips of the side walls to provide an elon-



gate shoulder for restraining the drawer in the opened condition and including grooves for receiving the upper guide rails of the cabinet.

3,967,871

PROCESS FOR MANUFACTURING TUBELESS VACUUM ELECTRIC DISCHARGE LAMPS

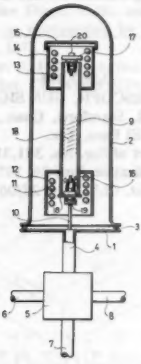
Bela Kerekes, Budapest, Hungary, assignor to Egyesult Izzolampa Es Villamossagi Resvenytarsasag, Budapest, Hungary

Division of Ser. No. 366,741, June 4, 1973, abandoned. This application June 30, 1975, Ser. No. 591,503

Claims priority, application Hungary, June 23, 1972, EE 2038

Int. Cl.² H01J *9/395*

U.S. Cl. 316—4 6 Claims



1. A process of manufacturing an electrical metal vapor discharge lamp with an elongated bulb and without a suction tube, comprising the steps of:

placing said elongated bulb in a chamber;

sealing a first end closure member and electrode assembly to a first end of said bulb;

introducing a discharge substance through a second end of said bulb;

mounting a second closure member provided with sealing material and an electrode assembly into said second end of said bulb;

producing a vacuum pressure in said chamber;

mounting a second closure member provided with sealing material and an electrode assembly into said second end of said bulb;

heating said first end of said bulb under said vacuum pressure so as to evaporate said discharge substance, while maintaining a remaining portion of the bulb between said ends at a lower temperature than that of said heated first end of said bulb so that the vapors of the evaporated discharge substance will precipitate on said remaining portion and said second end;

heating said second end of said bulb so as to evaporate said discharge substance, while maintaining said remaining portion at a lower temperature than that of said heated second end of said bulb so that the vapors of the evaporated discharge substance will precipitate on said remaining portion;

sealing said second closure member to said bulb by locally heating said second end of said bulb.

3,967,872

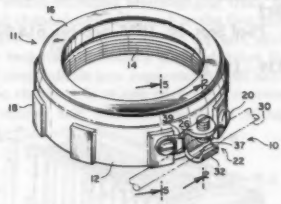
CRADLE-TYPE GROUND LUG FOR CONDUIT

Thomas Mooney, Mount Sinai, N.Y., and Richard A. Bauer, Etters, Pa., assignors to I-T-E Imperial Corporation, East Farmingdale, N.Y.

Filed Apr. 11, 1975, Ser. No. 567,377

Int. Cl.² H01R *3/06*

U.S. Cl. 339—14 L 10 Claims



1. A grounding lug to be secured to and to make contact with an electrical conducting surface comprising: a wire receiving body having a generally C-shaped cross section including a base superposed from said electrical conducting surface and upper and lower flanges extending transversely from opposite ends of said base, a binding screw extending down through the upper flange toward said lower flange and adapted to clamp the wire into engagement with the lower flange, and a mounting tang extending from one edge of said base between said flanges and angularly offset from a plane containing said base, said tang having a mounting screw opening therethrough transverse to the longitudinal axis of said tang and adjacent the end remote from said base.

3,967,873

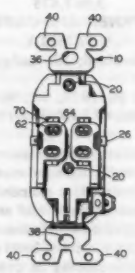
WIRE TERMINAL ELECTRICAL CONTACT

Walter Carl Schumacher, Warwick, R.I., assignor to General Electric Company, New York, N.Y.

Filed Feb. 27, 1975, Ser. No. 553,773

Int. Cl.² H01R *9/08*

U.S. Cl. 339—95 D 1 Claim



1. A wire terminal electrical contact for accepting a wide

range of wire diameters in the most compact manner possible comprising:

a. an insulating housing,

b. a conductive strip of metal having spring properties mounted and supported within said housing,

c. said strip having an F configuration of slits formed in the metal strip to form two movable tongues,

d. the end portions of said tongues being bent up from the plane of the strip,

e. circular openings in the housing aligned with and below the bent-up portions of said tongues,

f. said openings each being large enough to admit a wire of the largest diameter in the range and said openings intersecting along their entire extent,

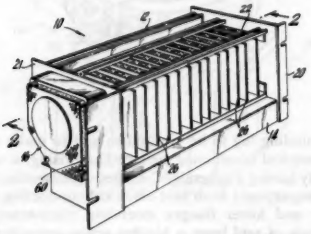
g. the area of intersection being smaller than the smallest wire diameter in the range and preventing movement of a smaller diameter wire from one opening to the other.

3,967,874

UNIFORMLY COOLED PRINTED CIRCUIT BOARD MOUNTING ASSEMBLY

Anthony D. Calabro, 8738 West Chester Pike, Upper Darby, Pa. 19082

Filed Sept. 30, 1975, Ser. No. 618,026
Int. Cl.² H01R *13/00*
U.S. Cl. 339—112 R **13 Claims**



1. A uniformly cooled printed circuit board mounting assembly comprising the combination of:

printed circuit board holding means for maintaining a plurality of printed circuit boards in generally parallel array;

an elongated plenum chamber secured to the lower end of said holding means and extending generally perpendicular to the planes of said printed circuit boards;

blower means for providing forced air to said plenum chamber; and

baffle means disposed in said plenum chamber and operative to generate turbulence of the forced air so as to cause the air to be uniformly distributed over the array of printed circuit boards.

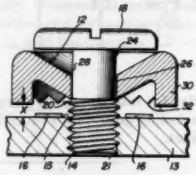
3,967,875

CAPTIVE FASTENER AND CAPTIVE WASHER ASSEMBLY

Peter P. Stanaitis, Rockford, Ill., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 10, 1975, Ser. No. 556,716
Int. Cl.² H01R *7/16*
U.S. Cl. 339—263 R **10 Claims**

1. A threaded terminal fastener assembly of the type engageable with an internally threaded element to effect clamping of an electrically conductive element, said assembly comprising a screw fastener element and an apertured clamping washer captively mounted on said fastener element, said screw fastened element having a driving head portion, and an elongate shank, said shank including an externally threaded portion and an unthreaded neck portion disposed intermediate said driving head portion and said threaded portion, said unthreaded portion having the apertured clamping washer element mounted thereon, said washer including an axially extending peripheral flange, an intermediate portion joined with said peripheral flange and extending radially inward thereof and defining a centrally disposed aperture, the improvement, wherein said intermediate portion includes at least



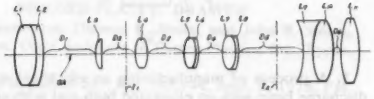
a segment thereof which is tapered radially inward and extends in the same direction as said peripheral flange, said tapered segment terminating at a location spaced axially of the point of juncture of said peripheral flange and said intermediate section, said segment engaging means on said fastener to maintain said clamping washer and said fastener in assembly.

3,967,876

TELESCOPIC GUN SIGHT

William F. Steck, III, Stamford, Conn., assignor to W. R. Weaver Company, El Paso, Tex.

Continuation-in-part of Ser. No. 381,312, July 20, 1973, abandoned. This application June 26, 1974, Ser. No. 483,168
Int. Cl.² G02B *23/00*
U.S. Cl. 350—54 **4 Claims**



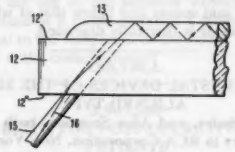
1. An optical gun sight comprising a plurality of lenses including objective lens means, ocular lens means, and erector lens means interposed between said objective and ocular lens means, said objective lens means having a diameter which, at a lowest magnification power of the sight, is operative to provide an exit pupil of at least about 25 mm in diameter, and said ocular lens means having a diameter which is substantially no greater than the diameter of said exit pupil at the lowest magnification power of the sight so that said ocular lens means is substantially filled with exit pupil at the lowest magnification power of the sight.

3,967,877

COUPLER FOR COUPLING OPTICAL ENERGY TRANSMITTED BY OPTICAL FIBER TO OPTICAL WAVEGUIDE AND METHOD OF MANUFACTURE

Paul F. Heidrich, Mahopac, and Carl G. Powell, Yorktown Heights, both of N.Y., assignors to International Business Machines (IBM), Armonk, N.Y.

Filed July 16, 1974, Ser. No. 489,012
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 C 16 Claims



1. A coupler for coupling energy from an optical fiber to a thin-film optical wave guide by internal reflection in said guide comprising,

a substrate with a surface and an optical wave guide on said surface,

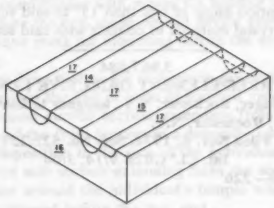
an optical fiber having a portion thereof included in said substrate with a cross section of said fiber lying in a plane of said surface.

3,967,878

OPTICAL WAVEGUIDE COUPLER

William M. Caton, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1975, Ser. No. 554,956
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 C 5 Claims



1. A passive coupler for transferring light energy between first and second optical paths comprising:

a first optical path including a first channel optical waveguide defined by a selected material diffused into a substrate for increasing the refractive index of the diffused region to support independent light wave propagation;

a second optical path including a co-directional second channel optical waveguide defined by a selected material diffused into said substrate for increasing the refractive index of the diffused region to support independent light wave propagation and disposed in substantially uniformly spaced, co-extensive, non-coupling proximity relative to said first channel optical waveguide and,

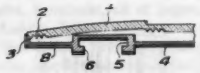
an area of said substrate overlapping the co-extensive portions of said channel optical waveguides and diffused with a material selected for inducing a determinable degree of passive coupling therebetween, but of insufficient depth of diffusion to support independent light wave propagation within said area.

3,967,879

SPOKE MOUNTED REFLECTOR

Yoshimasa Tsuyama, Osada, Japan, assignor to Tsuyama Manufacturing Co., Ltd., Japan

Filed Nov. 1, 1974, Ser. No. 519,852
Claims priority, application Japan, July 2, 1974, 49-78589[U]
Int. Cl.² G02B 5/12
U.S. Cl. 350—99 9 Claims



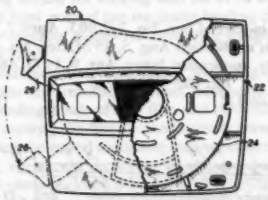
1. A spoke-mounted reflector for bicycles or the like comprising first and second side reflector means adapted to be secured to one another, each side reflector means comprising a support having a reflective outer surface the supports of said side reflector means including interengaging track and channel means, said channel means formed on the first support and said track means formed on said second support, said interengaging means including oppositely inclined outer faces, said track means being slidable into engagement with said channel means so as to clamp at least one spoke therebetween when the first and second side reflector means are engaged on a spoked wheel.

3,967,880

ADVERTISING AND SALES PROMOTION METHOD AND APPARATUS

Frank Johnson, Deerfield Road, Lake Katonah, R.F.D. No. 3, Katonah, N.Y. 10536

Division of Ser. No. 249,710, May 2, 1972, Pat. No. 3,844,057.
This application Sept. 18, 1974, Ser. No. 506,939
Int. Cl.² G02B 27/22
U.S. Cl. 350—133 3 Claims



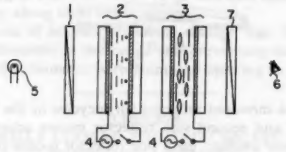
1. Apparatus for enhancing the visual display or presentation of goods comprising a light-weight housing capable of being held in the hand, said housing including a portable stereoscopic viewing device adapted for viewing stereo scenes through means of a plurality of images of said goods placed within said housing, manually actuated means for advancing said images in said housing, container means for an odor producing liquid within said housing, an odor producing liquid characteristic of said viewed goods within said container means, said container means capable of being opened by a knife-like instrument to release said odor liquid, and a knife-like instrument opening means in said housing movable with said manually actuated means to open said container so that said odor liquid can run out of said container and said odor can vaporize and become recognizable in the atmosphere adjacent said apparatus.

3,967,881

LIQUID CRYSTAL DISPLAY

Akio Moriyama, Katano; Masakazu Fukai, Nishinomiya; Seiichi Nagata, Sakai, and Katsuji Hattori, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1975, Ser. No. 563,800
Claims priority, application Japan, Apr. 4, 1974, 49-38605; May 17, 1974, 49-55868
Int. Cl.² G02F 1/13
U.S. Cl. 350—150 4 Claims



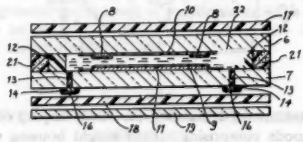
1. A liquid crystal display device comprising:
one linear polarizer;
a first liquid crystal display cell containing a nematic liquid crystal composition with positive dielectric anisotropy dissolving a dichroic dye and exhibiting a homogeneous alignment;
a second liquid crystal display cell containing a neumatic liquid crystal composition of a twisted structure located between said one linear polarizer and said first liquid crystal display cell;
said linear polarizer, second and first liquid crystal display cells being disposed on an optical path in a laminate structure; and
means for externally applying an electric field selectively to liquid crystal layers in said first and second cells.

3,967,882

LIQUID CRYSTAL DISPLAY DEVICE HAVING EXTENDED SERVICE LIFE

Kanemitsu Kubota, Suwa, and Jin Nagasaki, Shimosuwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 242,003, April 7, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 495,008
Claims priority, application Japan, Apr. 9, 1971, 46-22152
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC 10 Claims



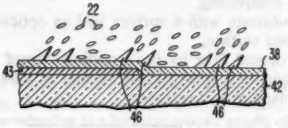
1. A field-effect liquid crystal display device, comprising a pair of opposed glass plates, at least one transparent electrode on the inner surface of each of said glass plates, said transparent electrodes being connectable to an external source of voltage, nematic liquid crystals of positive dielectric anisotropy between said glass plates, said nematic liquid crystals being thoroughly dry and free of volatiles, an insulating spacer of a material deformable at elevated temperature between said glass places and conforming exactly to said inner surfaces of said glass plates, a sealant which is free of volatiles and is essentially impermeable to water vapor between said glass plates and exterior to said spacer, a film of a synthetic resin covering that portion of the inner surface of each glass plate interior to said spacer, said films being unidirectionally grooved and thereby oriented, said films being thick enough to be grooved and thin enough to interfere only negligibly with transmission of visible light therethrough, said glass plates being mounted opposite each other so that the directions of the grooves on said opposed plates are at right angles to each other and a pair of polarizer plates sandwiching said glass plates, the deformation temperature of said spacer material being lower than the melting and decomposition temperatures of said synthetic resin, and said spacer and the inner surfaces of said glass plates being essentially free of such organic compounds, water and water-of-composition of said glass plates as are volatile at temperatures at least as high as the deformation temperature of said spacer and below that at which said synthetic resin flows or is thermally degraded.

3,967,883

LIQUID CRYSTAL DEVICES OF THE SURFACE ALIGNED TYPE

Dietrich Meyerhofer, and Alan Sussman, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 22, 1975, Ser. No. 579,969
Int. Cl.² G02F 1/16
U.S. Cl. 350—160 LC 7 Claims



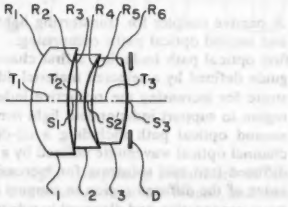
1. A liquid crystal device comprising,
an enclosure having a surface,
a first layer on said surface,
a second layer on said first layer,
said first and second layers having been deposited by slant evaporation processes onto said surface along directions at about right angles to each other, one of said layers evaporated at a deposition angle of between 20° and 50° to said surface and the other of said layers evaporated at a deposition angle of less than 15° to said surface and
a liquid crystal material in contact with said second layer.

3,967,884

THREE ELEMENT OBJECTIVE LENS

Donald De Jager, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,227
Int. Cl.² G02B 9/14, 3/04
U.S. Cl. 350—226 2 Claims



1. A three element objective lens comprising, from front to rear, a positive meniscus element, a negative biconcave element and a positive biconvex element, each of said elements being formed of a glass having an index of refraction in excess of 1.90 and said lens including an aspheric surface on the rear surfaces of said positive meniscus element and said negative biconcave element, said aspheric surfaces being represented

by the following formula and parameters:

$$x = \frac{Cy^2}{1 + \sqrt{1 - (1 + K)C^2y^2}} + Dy^4$$

Surface	R=1/C	K	D
2	36.338	0	0.12283×10^{-3}
4	9.4853	−1.6218	0

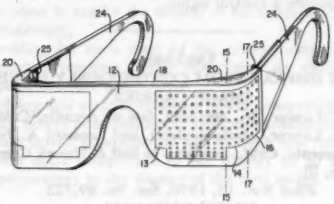
wherein x is the sag of the aspheric surface from a plane reference surface at a radial distance y from the axis of the lens, C is equal to the reciprocal of the vertex radius of curvature R and K is the conic constant.

3,967,885

OPTICAL DEVICE FOR POST-OPERATIVE CATARACT PATIENTS

William H. Byler, Winter Park, Fla., assignor to U.S. Radium Corporation, Morristown, N.J.

Filed Nov. 4, 1974, Ser. No. 520,647
Int. Cl.² G02C 7/16
U.S. Cl. 351—46 **27 Claims**



1. An optical device for use by post-operative cataract patients in combination with means for holding the device in position before the eye, saidd optical device comprising:

a. an opaque mask for mounting before the eye, said mask having:

1. a first front section for disposition generally in front of the eye in the line of sight of forward vision,
2. a second curved section extending from the outside edge of the front section in a generally curved pattern for disposition to the side of the individual's eye, and
3. a third side section extending from the second curved section toward the individual's temple when the mask is positioned before the eye; and

b. an array of discrete circular transparent areas on said mask:

1. said array extending along the surface area of each of the sections of said mask, and
2. said transparent areas being of a size and formed on centers spaced from each other in a pattern providing imaging for the eye when viewing objects through each of the sections of the mask.

23. An optical device for use by post-operative cataract patients in combination with means for holding the device in position before the eye, said optical device consisting of:

a. an opaque mask for mounting before the eye, said mask being about 40 × 50 mm. in size;

b. a central array of circular transparent areas in said mask forming a square pattern of about 20 mm. to a side;

c. a side array of transparent areas extending horizontally from the central array toward the outside of the mask, said side array being connected to the central array and having a vertical height of about 9 mm. and horizontal length of about 17 mm.; and

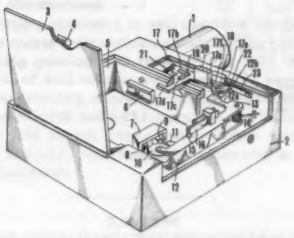
d. said transparent areas each having a diameter between 0.375 to 1.0 mm. and being formed on centers spaced from each other in linear rows in parallelogram pattern and together defining about 3% of the surface area of the plate.

3,967,886

MOTION PICTURE CAMERA CAPABLE OF SYNCHRONIZED SOUND RECORDING

Yoshio Komine, Tokyo; Kazuya Hosoe, Machida; Mamoru Shimazaki, Tokyo; Toshikazu Ichiyanagi, Tokyo, and Kiyoshi Takahashi, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,206
Claims priority, application Japan, Oct. 5, 1973, 48-112634
Int. Cl.² G03B 23/02
U.S. Cl. 352—29 **13 Claims**



1. A motion picture camera which permits recording image information and sound information concurrently on a photographic film contained in a film magazine with a sound recording track provided thereon, the camera comprising:

a camera housing having a film magazine loading chamber which is provided with an inlet port opening directed toward the outside of the housing for loading and unloading a film magazine;

an opening and closing lid selectively usable for covering said inlet port of the magazine loading chamber;

locking means for locking said lid in its closed position at said inlet port of the magazine loading chamber;

image forming means for recording image information on said film;

a sound recording mechanism including sound recording means for recording sound information on the sound recording track of said film and film transporting means for causing the film to continuously travel past a point at which the sound recording means performs sound recording, the sound recording mechanism being divided into two parts disposed across the path of the film and operable in two variable modes such that, in the first mode, the film path is widened to facilitate film loading and, in the second mode, the film path is narrowed with the sound recording mechanism partially coming into contact with said film; and

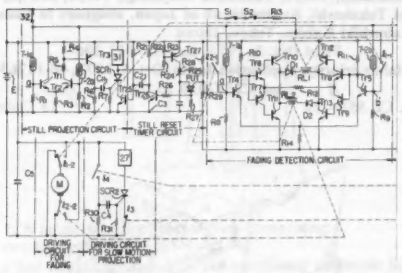
operating means for controlling the locking action of said locking means and the shifting between the two operating modes of said sound recording mechanism, the operating means being selectively shiftable, to first, second and third positions in a stepwise manner so that, in the first position, said locking means is held in an unlocking condition while the sound recording mechanism is held in said first mode, then, in the second position, the locking means is held in a locking condition while the sound recording mechanism is still held in the first mode and, in the third position, the sound recording mechanism is shifted into the second mode while the locking means is still maintained in the locking condition, the shifting path of the operating means being non-linear.

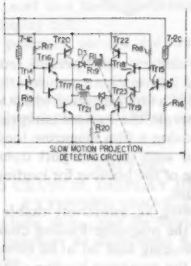
3,967,887

SYSTEM FOR CONTROLLING PROJECTION OF IMAGE INFORMATION RECORDING MEDIA

Kuniyoshi Suzaki, Machida, and Masanori Uchidoi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1974, Ser. No. 440,736
Claims priority, application Japan, Feb. 15, 1973, 48-18604
Int. Cl.[2] G03B 21/50
U.S. Cl. 352—92 34 Claims


STILL PROJECTION CIRCUIT
STILL RESET TIMER CIRCUIT
FADING DETECTION CIRCUIT
DRIVING CIRCUIT FOR FADING
DRIVING CIRCUIT FOR SLOW MOTION PROJECTION



1. In an image presentation system, wherein a film having recorded thereon images to be projected is converted from an ordinary projection mode to another projection mode, different from the former, by detection means which detect an indicia placed on the film, the improvement which comprises:

a. a film having:

1. a plurality of image information frames, on which image information is recorded, said information frames being provided linearly in the moving direction of the film at equally spaced intervals;
2. a projection mode information carrying region which is formed of a pair of indicia consisting of a first indicia having a low optical density and providing a relatively high transmission of light during the projection of the film, and a second indicia disposed adjacent said first indicia, having a high optical density with respect to said first indicia, and providing relatively low transmission of light during the projection of said film, and which is for directing change-over of the projection mode from one to another in a series of continuous information frames, said projection mode information carrying region being provided outside said frames and between the frames where the conversion of the projection mode is scheduled; and

b. a projection apparatus to present said image information on said film, said apparatus having:

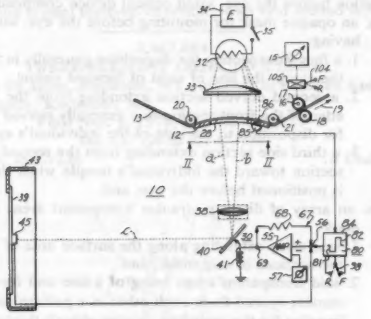
1. driving means to actuate said apparatus;
2. intermittent film feeding means, which is actuated by the driving force of said driving means, to intermittently feed said film to said projection position;
3. an information presentation mode conversion means for converting said image information presentation mode of the film, which said apparatus presents, from its ordinary presentation mode to another presentation mode, said information presentation mode conversion means having an indicia detecting means disposed at a position corresponding to the projection mode information carrying region for said film which has been fed to said projection position, and possesses light detection elements corresponding in number to at least said first and second indicia portions;
4. light irradiation means for the projection, which is actuated in interrelationship with said intermittent film feeding means, and irradiates the projecting light onto said film and projection mode information carrying region for only a predetermined period of time, when said intermittent film feeding means has completed feeding said film to said projection position;
5. control means electrically connected to said indicia detection means to control said information presentation mode conversion means utilizing an output from said detection means, said control means being provided with a circuit which differentially detects the differences in outputs from said detection elements and generates a control signal.

3,967,888

IMAGE DISPLAY FROM CONTINUOUSLY MOVING IMAGE CARRIER

Joseph H. Lancor, Jr., deceased, late of Arcadia, Calif. (by Ellen B. Lancor, administratrix), and Leonard A. Ferrari, San Clemente, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 13, 1970, Ser. No. 89,323
Int. Cl.[2] G03B 41/10
U.S. Cl. 352—109 17 Claims



1. In a method of displaying images of a succession of recordings from a substantially continuously moving carrier, with the aid of an electrically powered optical compensator of a type having a driven compensator part which is repeatedly advanced through a range of motion to compensate for the continuous carrier movement, and which is reset between successive advancements, the improvement comprising in combination the steps of:

advancing said driven compensator part through said range of motion in accordance with substantially the following equation of motion:

$$F(t) = J \frac{d^2x}{dt^2} + b \frac{dx}{dt}$$

where

- $F(t)$ = force for advancing the driven compensator part;
- J = mass-moment of inertia of the driven compensator part;
- b = damping coefficient of the driven compensator part;
- $\frac{dx}{dt}$ = velocity of the driven compensator part;
- $\frac{d^2x}{dt^2}$ = acceleration of the driven compensator part;

applying a substantially constant driving torque to said driven compensator part in response and proportional to said damping coefficient *b;*

applying a variable electric bias to said compensator for biasing during image display said driven compensator part in a direction opposed to the advance direction;

sensing relative movements of each displayed image;

controlling the application of electric power to said compensator in response to sensed image movements to advance the driven compensator part through said range of motion to render the display of each image substantially stationary;

providing for each reset of the driven compensator part electric resetting power comprising an electric power pulse doublet; and

applying said electric resetting power comprising said electric power pulse doublet to said compensator for resetting said driven compensator part through said range of motion upon completion of the display of an image and preparatory to the display of the next image.

3,967,889

DRIVE AND STOPPING METHOD AND DEVICE FOR A CINEMATOGRAPHIC CAMERA

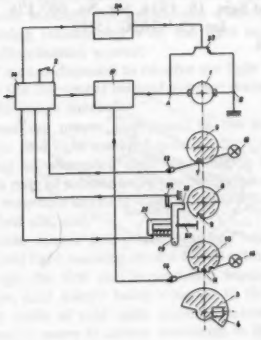
Serge Oulevay, Yverdon, and Marc Niederhauser, Boudry, both of Switzerland, assignors to Bolex International SA, Ste-Croix, Switzerland

Filed Sept. 7, 1973, Ser. No. 395,048

Claims priority, application Switzerland, Sept. 8, 1972, 013591/72

Int. Cl.² G03B *1/00*

U.S. Cl. 352—174 **5 Claims**



1. In a cinematographic apparatus, means defining an optical path;

a shutter arranged to intercept said optical path and having an open position and a closed position;

an electric motor drivingly coupled with said shutter to control its position;

a power supply circuit to energize said motor;

position detecting means coupled to said shutter for common rotation to supply a signal every time a predetermined position is reached by said shutter in a timed relation to said closed position of said shutter;

release means moveable into operative and inoperative positions for controlling the drive of said shutter;

mechanical locking means to stop said shutter mechanically in its closed position, said locking means including abutting means moveable into an unlocking position and moveable towards a locking position, and counter-abutting means coupled to said shutter for common movement and for abutting in a locking relationship against said abutting means to lock said shutter in said closed position;

electric brake means to stop the motor within a predetermined distance; and

control means responsive to said operative position of said release means for maintaining said abutting means in said unlocking position and responsive to said inoperative position of said release means and said signal of said position detecting means for causing said abutting means to move towards said locking position and initiating braking by said electric brake means before said abutting means and said counter-abutting means abut in said locking relationship.

3,967,890

CARRIAGE MECHANISM FOR MICROFICHE READER

Thomas R. Wells, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 16, 1974, Ser. No. 532,801

Int. Cl.² G03B *1/42*

U.S. Cl. 353—27 A **6 Claims**

1. A microfiche film holding device comprising means for enabling said device to travel over a mutually perpendicular set of rails with a rectilinear movement, a pair of spaced parallel glass plates mounted on said device to travel with said device over said rectilinear movement means on said device for automatically lifting one of said glass plates when said device is moved to one extremity of said rectilinear movement, said device including an upper generally rectangular carrier mounted on a generally rectangular lower carrier, each of said rectangular carriers having wheels on the corners thereof engaging said rails, one set of said rails being mounted on a microfiche reader, the other of said set of rails being mounted on said lower carrier, said automatic lifting means including a dependent hook means on said upper carrier, and said lower carrier including a slot terminating in an upstanding wall for engaging said hook, said engagement of said hook and said upstanding wall lifting said one glass plate.

3,967,891

IMAGING SYSTEM FOR ELECTROSTATIC REPRODUCTION MACHINES

Robert P. Rippstein, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1975, Ser. No. 567,902

Int. Cl.² G03G *15/00*

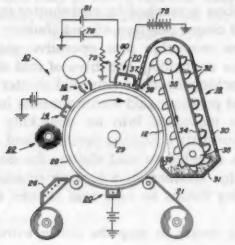
U.S. Cl. 355—3 R **6 Claims**

1. In an electrostatic reproduction machine having a photoconductive member, the combination of:

charging means to charge said photoconductive member in preparation of imaging

exposure means to expose said charged photoconductive member to selectively discharge said photoconductive member and form a latent electrostatic image on said photoconductive member in accordance with the original being reproduced;

means forming a reservoir of charged ions, said ions being charged opposite from said photoconductive member charge whereby charges left on said photoconductive member and comprising said latent electrostatic image tend to attract oppositely charged ions from said reservoir



in accordance with the charge level of the charges left on said photoconductive member and thereby reduce peak charge levels remaining on said photoconductive member; and

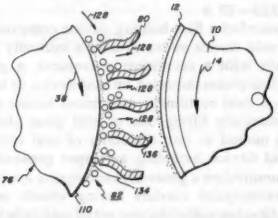
control gate means for regulating the flow of ions from said reservoir to said photoconductive member.

3,967,892

DEVELOPMENT SYSTEM

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 26, 1974, Ser. No. 492,305
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 DD **14 Claims**



8. An electrophotographic printing machine of the type having a photoconductive member, means for charging the photoconductive member to a substantially uniform charge potential, and an exposure mechanism for projecting a light image corresponding to the original document being reproduced onto the charged photoconductive member to record thereon an electrostatic latent image thereof, wherein the improvement includes:

magnetic field producing means operatively positioned closely adjacent to the electrostatic latent image recorded on the photoconductive member for forming a brush-like array of developer mix comprising carrier granules and toner particles;

development electrode means associated with said magnetic field producing means;

means for separating a portion of the toner particles from the developer mix including a plurality of closely spaced vanes arranged to contact the brush-like array of developer mix; and

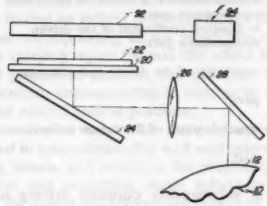
means for moving the separated toner particles into contact with the electrostatic latent image recorded on the photoconductive member producing a toner powder image thereon.

3,967,893

ILLUMINATING APPARATUS

Edward J. Majewicz, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 465,443
Int. Cl.² G03G *15/30*
U.S. Cl. 355—4 **12 Claims**



1. An apparatus for exposing a moving charged photoconductive member to record thereon an electrostatic latent image corresponding to an original document, including:

an array of solid state light emitters, said array comprising a plurality of parallel rows of solid state light emitters;

means for supporting the original document in a light receiving relationship with said array of solid state light emitters, said array of solid state light emitters illuminating the original document;

means for projecting the light rays transmitted from the original document onto the charged photoconductive member;

means for driving the photoconductive member at a substantially constant velocity;

means for successively energizing parallel rows of said array of solid state light emitters;

timing means, operatively associated with the photoconductive member, for generating an electrical signal indicative of the movement of the photoconductive member; and

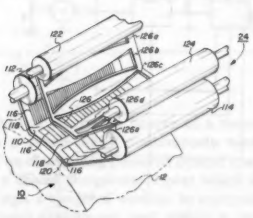
circuit means coupling said timing means with said energizing means to excite successive rows of said light emitters in a timed relation with the movement of the photoconductive member to transmit light rays corresponding to successive portions of the original document to said projecting means.

3,967,894

SCREENED OPTICAL SYSTEM

George N. Tsilibes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1974, Ser. No. 507,176
Int. Cl.² G03G *15/22*
U.S. Cl. 355—4 **9 Claims**



1. An optical system including:

a light source positioned to illuminate an original document with light rays;

a lens in a light receiving relationship with the light rays transmitted from the original document to form a light image thereof;

a plurality of screen members;

a belt member having each of said screen members mounted thereon in a spaced relationship with one another;

means for movably supporting said belt member;

means for moving said belt member to position a preselected one of said screen members in the optical light path in a light receiving relationship with the light image transmitted from said lens with the other of said screen members being spaced from the optical light path;

a substantially opaque belt member having a plurality of spaced slits therein, each of the slits decreasing the intensity of the light image inwardly from the marginal regions to the central region thereof;

means for movably supporting said opaque belt member; and

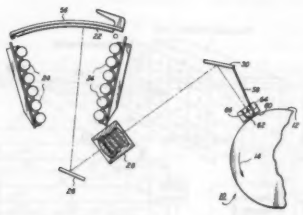
means for moving said opaque belt member to position a pre-selected one of said slits in the optical light path in a light receiving relationship with the light image transmitted from said lens with the other slits therein being spaced from the optical light path.

3,967,895

ILLUMINATION CONTROL SYSTEM

Douglas L. Crook, Reno, Nev., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1974, Ser. No. 507,104
Int. Cl.² G03G *15/30*
U.S. Cl. 355—8 **6 Claims**



1. An apparatus for controlling exposure of a light receiving surface, including:

a source of illumination for generating light rays;

a support member for positioning a document in a light receiving relationship with the light rays generated by said illumination source;

optical means disposed to receive the light rays transmitted from the document on said support member for creating a light image thereof;

light masking means interposed in the path of the light image, said light masking means comprising a base plate having an elongated light transmitting first slit therein, and a pair of substantially opaque, spaced apart movable wall members defining a second slit in juxtaposition with the first slit; and

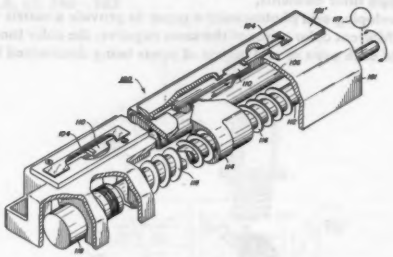
a movable mirror interposed between said optical means and said light masking means for directing the light image through the first and second slits in said light masking means, said mirror being coupled to the pair of spaced apart walls of said light masking means and being arranged to move in unison therewith so that movement of said mirror regulates the width of the second slit in said light masking means, thereby defining the size of the second slit through which the light image passes.

3,967,896

VARIABLE EDGE FADEOUT APPARATUS FOR ELECTROSTATIC REPRODUCTION MACHINES

John H. Looney, Fairport; Hugh L. Jones, Rochester, and Donald R. Tickner, Pittsford, all of N.Y., assignors to Rank Xerox Ltd., London, England

Filed May 14, 1975, Ser. No. 577,374
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **8 Claims**



1. A discharge device for use in erasing a boundary area on the movable photosensitive member of an electrostatic type reproduction machine, comprising:

a housing adjacent said photosensitive member, said housing having at least one opening facing said photosensitive member;

discharge lamp means in said housing for illuminating said photosensitive member through said opening to discharge the area of said photosensitive member illuminated;

a shutter for controlling the size of said opening;

means supporting said shutter for movement over said opening to change the size of said opening and vary the area of the photosensitive member discharged; and

reversible drive means for moving said shutter selectively forward and backward to provide infinite changes in the size of said opening and the area of the photosensitive member discharged.

3,967,897

APPARATUS AND METHOD FOR EVALUATING COLOR NEGATIVES

Winston L. Rogers, P.O. Box 206, Rheem Valley, Calif. 94570

Filed Oct. 4, 1974, Ser. No. 512,077
Int. Cl.² G03B *27/32, 27/52, 27/44*
U.S. Cl. 355—32 **7 Claims**

1. An apparatus for color negative evaluation for use with a photo enlarger comprising

a set of interchangeable filter matrix boards, each board having a plurality of different gradation filter elements disposed therein and means for compensating for transparency differentials between filter elements,

a lens matrix board arranged for positioning an individual lens with respect to each of the filter elements in any one of said filter matrix boards, and

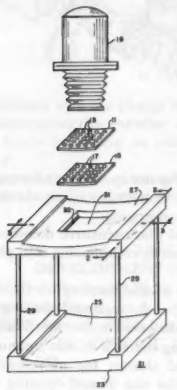
a frame for supporting said lens matrix board and a filter matrix board preselected from said set of interchangeable filter matrix boards complimentary to one another between the photo enlarger and a sheet of photosensitive paper such that the image on a color negative held in the photo enlarger can be projected through said lens matrix and said preselected filter matrix and focused onto said photosensitive paper to produce a plurality of images thereon whereby each of said plurality of images has a different coloration from each of the others depending on the combination and gradation of filter elements disposed in the filter matrix board selected.

7. A method for color negative evaluation for choosing a suitable filter combination for the final color print comprising,

removing the focusing lens from a standard type photo enlarger,

exposing said color negative to photosensitive paper concurrently through a filter matrix board preselected from a set of filter matrix boards and a lens matrix board wherein the filter elements of said filter matrix board have different filter combinations and gradations depending on the matrix board selected and are equalized to correct for transparency differentials, and the lenses of said lens matrix board are arranged complimentary to said filter elements,

developing said photosensitive paper to provide a matrix of different color prints of the same negative, the color tones of each print of said matrix of prints being determined by



the particular filter combination associated therewith whereby said matrix of color prints can be visually evaluated to determine which filter combination of said matrix of filter elements produces the print which most accurately reproduces the true coloration of the subject or which is visually the most pleasing to the eye, and

repeating the aforementioned steps of exposing and developing the photosensitive paper, as required to obtain a desired color reproduction, using a new filter matrix board of finer gradation selected from said set of matrix boards, said newly selected matrix board to be determined in accordance with the filter combination of the element of said matrix board giving the best overall print coloration from the previous exposure.

3,967,898

OPTICAL DISTORTION DEVICE

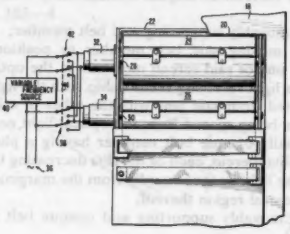
Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22981

Filed Nov. 14, 1974, Ser. No. 523,947

Int. Cl.² G03B *27/10*

U.S. Cl. 355—110 **7 Claims**

1. A device for producing a print from a photographic image with a predetermined change in one dimension thereof comprising a fixed frame, light source means mounted in said frame, enclosure means surrounding said frame and having a flat upper surface provided with an elongated light aperture, first and second roller means rotatably mounted in said fixed frame with the axes of rotation thereof disposed parallel to each other and to said elongated light aperture, attaching means on said roller means to which an image sheet and a photosensitive sheet may be secured, drive means for rotating said first and second roller means at different speeds to drive said sheets in superimposed relation on said flat surface across said light aperture to provide a distorted image on said photosensitive sheet in the direction of travel of said sheets, said drive means being comprised of two variable speed synchronous motors connected to said first and second rollers, respectively, a source of line voltage, means for varying the frequency of said line voltage means and switch means for selec-



tively connecting one of said motors directly to said line voltage and the other said motors to the output of said means for varying the frequency of the line voltage whereby the speed of said other motor may be varied relative to the speed of said one of said motors.

3,967,899

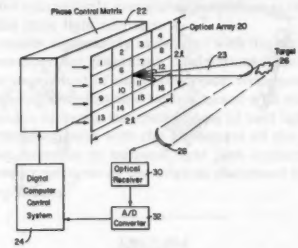
METHOD AND APPARATUS FOR MAINTAINING FAR FIELD SPATIAL COHERENCY IN ELECTROMAGNETIC TRANSMITTING SYSTEMS

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 30, 1974, Ser. No. 537,214

Int. Cl.² G01C *3/08;* **G01B** *11/26*

U.S. Cl. 356—5 **10 Claims**



1. A method of controlling the relative phasing of a plurality of transmitted beams of electromagnetic energy such that the energy is substantially in phase at a remotely located target; said method comprising the steps of:

a. identifying a plurality of spatial orthogonal sets of said plurality of beams, such that each set has a first portion comprised of some of said plurality of beams and a second portion comprised of the remaining ones of said plurality of beams;

b. applying phase perturbations to the beams of the first portion of a given set and measuring the relative intensity of the transmitted energy reflected from the target;

c. applying phase perturbations to the beams of the second portion of said given set and measuring the relative intensity of the transmitted energy reflected from the target;

d. computing a phase value, based on the intensities measured in steps (b) and (c), which when inserted into the beams of one portion of said given set will substantially reduce the difference between said measured intensities of the reflected energy;

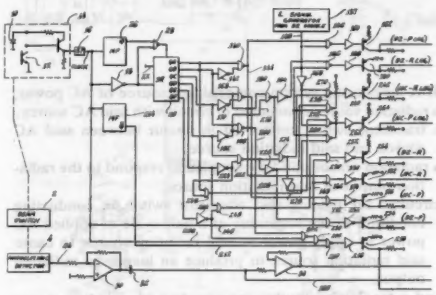
e. applying said computed phase value to the beams of said one portion of said given set; and

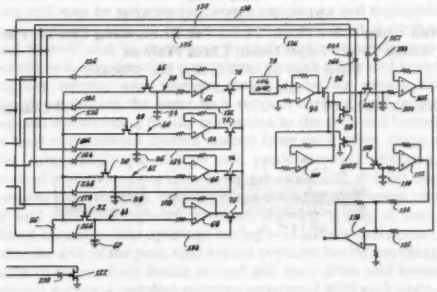
f. sequentially repeating steps (b) through (e) for each of said spatial orthogonal sets.

3,967,900
SIGNAL GATING DEVICE

Heinz Willi Henninger; Lothar Riethmüller, both of Uhldingen-Muhlhofen, both of Uhldingen-Muhlhoffen; Hans Walter Kiefer, Nussdorf, and Ernst Gunther Robert Spreitzhofer, Uberlingen, all of Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Germany

Filed Feb. 12, 1975, Ser. No. 549,157
Claims priority, application Germany, Feb. 16, 1974, 2407607
Int. Cl.² G01J 3/42
U.S. Cl. 356—88 12 Claims





1. Apparatus for directing signals from a photoelectric detector to separate storage channels in sequence with the positions of a beam switch which sequentially directs light from different beams to the photoelectric detector, comprising:

counter means for generating output signals in sequence with input pulses thereto;

a logic gate having the output thereof connected to reset the counter means;

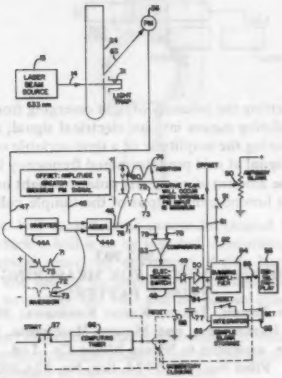
gating means for directing signals from the photoelectric detector to each storage channel in sequence with the output signals of the counter means; and

photoelectric means for generating a marker pulse within a sequence of clock pulses which correspond to the positions of the beam switch, the pulses being connected to the input of the counter means and to one input of the logic gate, with a second input of the logic gate being connected to the pulses through a monostable flip-flop.

3,967,901
NEPHELOMETER HAVING MEANS SEMIAUTOMATICALLY CANCELLING COMPONENTS FROM SCATTERING BY PARTICLES SMALLER OR LARGER THAN THOSE OF INTEREST

Rodolfo R. Rodriguez, Columbia, Md., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 545,069, Jan. 29, 1975, abandoned. This application July 31, 1975, Ser. No. 600,593
Int. Cl.² G01N 21/00
U.S. Cl. 356—103 5 Claims



1. A method of discriminating against the effects of artifacts in optical testing wherein a light beam is directed through material containing particles of interest and wherein such particles are detected by the response of a photosensitive electrical detector located in a selected scatter beam path leading from said material which generates a signal wave containing fluctuating artifact peaks representing fluctuating particles larger than those of interest along with a steady normal signal component representing the particles of interest, comprising inverting said signal wave, adding a constant signal of the same original polarity as said artifact peaks to the inverted signal wave but greater in amplitude than that of the maximum artifact peak, whereby to obtain an inverted signal wave wherein the former artifact peaks are reversed in sense, switching out the reversed artifact peaks of the inverted signal wave, and generating a resultant smoothed output signal from the remainder of the inverted signal wave, whereby the amplitude of said smoothed output signal represents quantitatively the particles of interest unaffected by the fluctuating artifacts from particles larger than those of interest.

3,967,902
METHOD AND APPARATUS FOR INVESTIGATING THE CONFORMATION OF OPTICALLY ACTIVE MOLECULES BY MEASURING PARAMETERS ASSOCIATED WITH THEIR LUMINESCENCE

Izchak Zevi Steinberg, Rehovoth, Israel, assignor to Yeda Research & Development Co. Ltd., Rehovoth, Israel

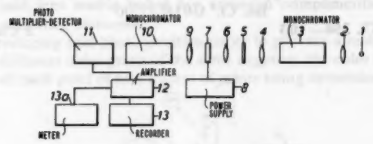
Continuation-in-part of Ser. No. 224,706, Feb. 9, 1972, abandoned. This application July 22, 1974, Ser. No. 490,660
Claims priority, application Israel, Feb. 26, 1971, 36297
Int. Cl.² G01J 4/00
U.S. Cl. 356—114 11 Claims

1. A method of investigating the conformation of optically active molecules comprising the steps of:

a. projecting a monochromatic and unpolarized beam of light into a sample cell containing such molecules for causing the latter to luminesce;

b. beaming a portion of the luminescent output of the sample cell through optical modulating means in such a way as to minimize the amount of linear polarization incident on the optical modulating means;

c. driving the optical modulating means at a predetermined frequency for intensity modulating polarized light incident thereon;



d. converting the intensity of light emerging from the optical modulating means into an electrical signal; and

e. measuring the amplitude of a time-variable component in said signal at said predetermined frequency for determining the amount of circularly polarized light in said portion of the luminescent output of the sample cell.

3,967,903

PHOTODENSITOMETER FOR MEASURING OPTICAL FRINGE PATTERNS

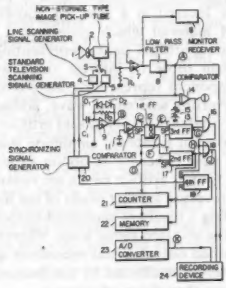
Toyoichiro Enami, Tokyo; Kazuo Kurasawa; Masaktaka Ii, both of Hamamatsu, and Masaru Hashimoto, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Nov. 18, 1974, Ser. No. 524,808

Claims priority, application Japan, Nov. 22, 1973, 48-130729

Int. Cl.² G01B *11/00*

U.S. Cl. 356—167 **8 Claims**



1. A photodensitometer comprising:

an image pick-up tube of the non-storage type for receiving light rays from fringes formed on a sample:

first scanning means for energizing said image pick-up tube so that said image pick-up tube scans said sample along a scan line and produces an image signal representing brightness of the fringes lying on the scan line;

pulse generating means responsive to said image signal for producing a position pulse at each of the maximum and minimum values of said image signal; and

circuit means for producing an output signal corresponding to an interval from the beginning of scanning along the scan line to a moment when each position pulse appears, whereby said output signal represents a spacing from the beginning point of the scan line to each of the position pulses.

3,967,904

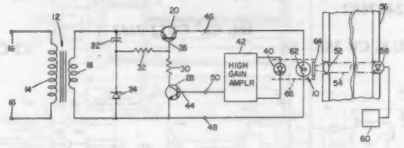
PRECISION RADIATION SOURCE REGULATION CIRCUIT

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Jan. 15, 1975, Ser. No. 541,741

Int. Cl.² G01N *21/22*; G01J *1/32*; H05B *37/02*

U.S. Cl. 356—201 **13 Claims**



1. A monitoring system comprising a source of AC power,

a radiation source connected in circuit with said AC source,

a transistor switch connected in circuit between said AC source and said radiation source,

a radiation sensor optically coupled to respond to the radiation output of said radiation source,

circuitry for placing said transistor switch in conducting condition at the beginning of a half cycle of applied AC power to apply power to said radiation source to cause said radiation source to produce an increased radiation output,

and a feedback circuit responsive to said radiation sensor for placing said transistor switch in non-conducting condition in response to said increased radiation output of said radiation source to terminate energization of said radiation source during that half cycle of applied AC power so that the radiation output of said radiation source is regulated with precision.

3,967,905

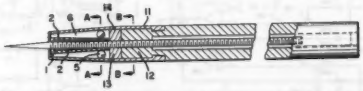
SELF-SHARPENING PENCIL

Wan Hsing Hsien Hsieh, 21 Fu Teh Road, Kang Chu Li, Pan Chiao Town, Taipei Hsien, China /Taiwan

Filed May 12, 1975, Ser. No. 576,458

Int. Cl.² B43K *29/06*

U.S. Cl. 401—51 **3 Claims**



1. A self-sharpening mechanical pencil comprising, in combination:

a tubular body, for receiving an elongated graphite core in a central bore thereof;

driving means, for axially reciprocating said graphite core and simultaneously rotating the same;

a sharpening mechanism, contained within the tubular body, for abrading the forward end of the graphite core into a sharpened configuration, said sharpening mechanism including a pair of pivotally disposed abraders having abrading surfaces which form a sharpening core upon convergence of the abraders; and

cam means for engaging said abraders with the graphite core in one position of the mechanical pencil, and for disengaging said abraders from the graphite core in another position of the mechanical pencil, said cam means comprising channels in the inner wall of the tubular body adjacent to the outer surface of the abraders in combination with movable members disposed therein, said channels being increasingly shallower toward the tip of the mechanical pencil whereby the displacement of said

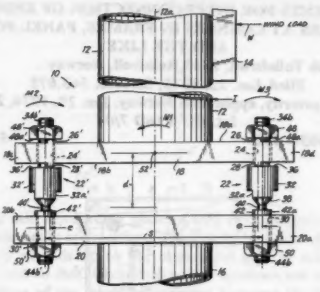
movable members towards said tip causes said abraders to pivotally converge to form a sharpening cone.

3,967,906

SAFETY BREAK-AWAY GROUND MOUNTED POST SUPPORT ASSEMBLIES

Richard A. Strizki, Ringoes, N.J., assignor to Transpo-Safety, Inc., New Rochelle, N.Y.

Continuation-in-part of Ser. No. 470,371, May 16, 1974. This application May 2, 1975, Ser. No. 574,247
The portion of the term of this patent subsequent to Apr. 20, 1993, has been disclaimed.
Int. Cl.² F16D 9/00
U.S. Cl. 403—2 26 Claims



1. A breakaway assembly for supporting an elongate post or the like at one end thereof, which post generally defines an axis and may be subjected to transverse forces and negligible vertical forces along a predetermined direction at the other end thereof and to transverse forces proximate to the supported end, the assembly comprising: spaced upper and lower support means, said support means including means for fixedly anchoring the same to a support surface, said upper support means being fixedly connected to the post and having at least two portions thereof spaced from each other along a line substantially parallel to said predetermined direction, each of said spaced portions being provided with at least one opening therethrough, two openings, each on a different one of said associated spaced portions, defining a pair of associated openings, said openings having axes substantially parallel to the axis of the post, said spaced portions having opposing surfaces respectively facing toward and away from said lower support means; a coupling member associated with each opening in said spaced portions, each coupling member extending between an associated spaced portion and said lower support means, each coupling member being provided with a weakened portion disposed between said upper and lower support means and being fixedly connected at one end to said lower support means, the other end of each coupling member extending through an associated opening and defining two spaced bearing surfaces each of which faces a different one of said opposing surfaces of said spaced portions; and protuberance means joined to and projecting from each of said opposing surfaces of said spaced portions, one of said protuberance means being disposed between one of said opposing surfaces and as associated bearing surface of a coupling member and being in abutting relationship against the latter, and another protuberance means being disposed between the other of said opposing surfaces and an associated bearing surface of a coupling member and being in abutting relationship against the latter, each protuberance means being eccentric relative to the axis of an associated opening to dispose the same inwardly in the space between a pair of associated openings.

3,967,907

BALL SOCKET FOR BALL JOINT

Andreas Schmidt, Meerbusch, Germany, assignor to A. Ehrenreich & Cie., Dusseldorf-Oberkassel, Germany

Filed July 2, 1975, Ser. No. 592,363
Claims priority, application Germany, July 18, 1974, 2434490
Int. Cl.² F16C 11/00; F16D 1/12
U.S. Cl. 403—133 4 Claims

1. A plastic ball socket for a grease lubricated ball joint socket into which a ball is to be inserted, comprising:

a hemispherical inner cup composed of thin hard, elastic material and having an internal surface adapted at least partially to engage the ball and having an external surface;

an outer cup composed of soft elastic material with an inner surface at least partially conforming to and supporting the external surface of said inner cup; and

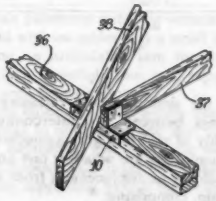
elongated rib means disposed on an outer surface of said outer cup and being operable to support said outer cup in said ball joint socket spaced apart from said ball joint socket, whereby said plastic ball socket may be deformed during use to form grease lubrication grooves between said internal surface and the ball.

3,967,908

CROSS TIE SADDLE BRACKET

Kenneth T. Snow, 1303 N. Cross St., Wheaton, Ill. 60187, and Kenneth T. Snow, Jr., 317 Shagbark Court, Schaumburg, Ill. 60172

Filed Apr. 21, 1975, Ser. No. 569,680
Int. Cl.² F16B 5/00
U.S. Cl. 403—219 1 Claim



1. A cross-tie saddle bracket comprising an elongated L-shaped member having a horizontal top portion and a vertical side portion of substantially the width of 2 inch nominal lumber, said elongated L-shaped member having a plurality of holes in both its horizontal top portion and its vertical side portion, a first L-shaped member having its width substantially the width of 4 inch nominal lumber and having a horizontally disposed side and a vertically disposed side, the outer end of the horizontal side of said first L-shaped member lying flush with one end of the horizontal top portion of said elongated L-shaped member and welded thereto in a manner so that one

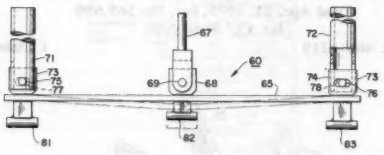
side edge of the horizontal side is substantially flush with the vertical side portion of the elongated L-shaped member and the other side edge overhangs the surface of the horizontal top portion by an amount substantially the width of 2 inch nominal lumber, and a spaced apart identical second L-shaped member having the end of the horizontal side thereof lying flush with the other end of said elongated L-shaped member and one side edge thereof being-substantially flush with the vertical side portion of the elongated L-shaped member and the other side edge overhanging the surface of the horizontal top portion by an amount substantially the width of 2 inch nominal lumber, and the second L-shaped member welded to said horizontal top portion of the elongated L-shaped member in the same manner as the first L-shaped member, said vertical sides of said first and second L-shaped members being spaced apart and disposed generally parallel to each other, said first and second L-shaped members having holes in both the horizontal and vertical sides with at least one hole of the horizontal sides being in alignment with at least one hole in the horizontal top portion of the elongated L-shaped member, whereby the elongated L-shaped member is adapted to have its vertical side portion abut and be nailed through the holes therein to the side of the top wooden wall plate of a building, and the horizontal top portion of the elongated L-shaped member and its superimposed horizontal sides of the first and second L-shaped members thereon are adapted to be jointly nailed to the top of the top wooden wall plate and the overhanging portions of the horizontal side portions are adapted to be separately nailed directly to the top wooden wall plate, and the spaced apart vertical sides of the first and second L-shaped members are adapted to act as a saddle for building cross tie members and are adapted to have nails driven through the holes therein to the cross tie members to thus provide for the secure locking of the wall plate to the cross tie members.

3,967,909

LATCHING AND LATCH RELEASING MECHANISM FOR AUGER STRING COUPLINGS

Ronald C. Deeter, Malvern; Thad A. Lora, and John M. Pozniko, both of Salem, all of Ohio, assignors to The Salem Tool Company, Salem, Ohio

Filed Nov. 7, 1974, Ser. No. 521,637
Int. Cl.² F16D 7/00
U.S. Cl. 403—322 **12 Claims**



1. Apparatus for simultaneously releasing a plurality of adjacent couplings between two interconnected members wherein a plurality of said two interconnected members and their respective couplings are adjacent one another in lateral alignment and subject to displacement from an intended coplanar relationship, comprising:

a latch pin for each coupling, mounted on one of the interconnected members of each coupling and adapted for reciprocating movement between a latching position in engagement with said other member and a retracted unlatching position out of engagement with said other member,

resilient means biasing each latch pin to said latching position,

a lever for each latch pin pivotally mounted on said one member, operatively connected to its respective latch pin and having an operating arm adapted when depressed, to move said latch pin to its retracted position,

unlatching means reciprocable toward and away from said operating arms between a retracted position and an extended position wherein said unlatching means engages and pivots each of said operating arms to unlatch each of said couplings,

said unlatching means being provided with means to allow it to flex adequately to accommodate variation in the locations of said operating arms relative to one another out of a common plane so that extension movement of said unlatching means continues beyond a position whereat certain of said latch pins are retracted until all of said latch pins are retracted even though said latch pins are displaced from their predetermined coplanar position, and

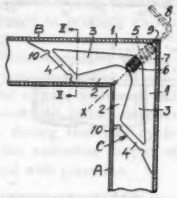
means for operating said unlatching means.

3,967,910

ELEMENTS FOR INTERCONNECTION OF ENDS OF PROFILES AT CORNERS IN FRAMES, PANEL POINTS AND THE LIKE

Ole Jachob Tollefsrud, 2840 Reinsvoll, Norway

Filed Jan. 22, 1975, Ser. No. 543,075
Claims priority, application Norway, Jan. 29, 1974, 268/74
Int. Cl.² F16D 7/04
U.S. Cl. 403—402 **5 Claims**



1. An unitary element for interconnecting the ends of frame sections at corners in frames, panel points and the like, comprising at least two legs arranged at right angles to each other, each having in common an inner and an outer angle wall said angle walls being opposed to each other and defining an intermediate space therebetween and inclined end walls connected to the corresponding ends of the angle walls in each leg, the inner and outer angle walls forming inner and outer adjacent apex points, respectively, at a corner angle of the legs, said element further comprising means for forcing the apex points of the angle walls apart so as to impart in each leg a dislacement of the angle walls relative to each other which, in cooperation with the inclined end walls of the legs, causes contemporary and substantially equal expansion force to be applied so as to expand both legs in the ends of the respective frame sections to fasten the frame sections together.

3,967,911

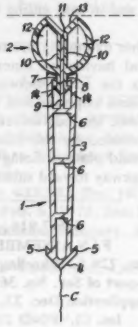
SEALING MEMBER

John Aubrey Miers, Woodford Green, England, assignor to John Aubrey Miers, Woodford Green, England

Filed Nov. 27, 1974, Ser. No. 527,867
Claims priority, application United Kingdom, Nov. 28, 1973, 55173/73
Int. Cl.² E01C 11/02
U.S. Cl. 404—48 **6 Claims**

1. An insertion member for use in the construction of concrete slabs, comprising a first elongated element of rigid synthetic plastic material having an upper and a lower portion each extending longitudinally of said first element, said first element diverging in direction from said lower to said upper portion, said upper portion being formed with a shoulder region and with an upstanding reinforcing plate extending upwardly beyond said shoulder region, said plate being separated from said shoulder region by a pair of slits extending

longitudinally of said first element; and a second elongated element of resiliently yieldable material including a bifurcated web extending longitudinally of said second element and having a top end and a pair of limbs extending downwardly from said top end and each having a lower end formed with a laterally extending rib, and a pair of hollow sections laterally flanking said web adjacent said top end thereof, said first and second elements being so connected that said second element



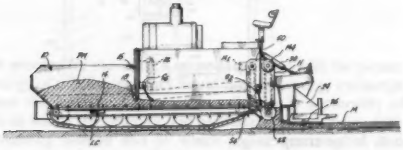
straddles said reinforcing plate of said first element and said ribs of said limbs are received in said slits, respectively, so that said plate extends up to the uppermost part of said second element and so that, when said hollow sections are evacuated for insertion of the insertion member between the slabs, and thus collapsed against said reinforcing plate, the latter reinforces said hollow sections and said shoulder region protects the same from below during said insertion.

3,967,912

PAVER FEED CONTROL

Jimmy L. Parker, 19909 Filbert Drive, Bothell, Wash. 08011

Filed Mar. 18, 1974, Ser. No. 452,056
Int. Cl.² E01C *19/00*
U.S. Cl. 404—84 **10 Claims**



1. In a paving machine comprising a pair of endless feed conveyors arranged to deliver paving material rearwardly from a hopper to the inboard ends of a pair of transverse augers which spread the material outwardly and deposit it onto the surface being paved forwardly of a leveling screed which trails the augers, the improvement comprising:

a fixed height opening at the hopper to control the amount of paving material that is delivered from the hopper onto each feed conveyor;

a separate variable speed drive means for each feed conveyor, each of which is operatively connected to its feed conveyor;

control means for the feed conveyor drive means, including a separate sensor for each feed conveyor, each of which is mounted on the paving machine adjacent the discharge end of its feed conveyor and at the inboard end of the associated auger, for measuring changes in the level of the paving material deposited onto the surface below the sensor and producing a signal proportional to said changes, and means operatively connected to said sensor which is responsive to the signal indicating changes in the level of the paving material at the sensor, for proportionally and substantially instantaneously increasing the drive speed of the associated feed conveyor as the level drops and proportionally and substantially instantaneously decreasing the drive speed of such feed conveyor as the level rises;

a separate variable speed drive means for each auger, each of which is operatively connected to its feed conveyor; and

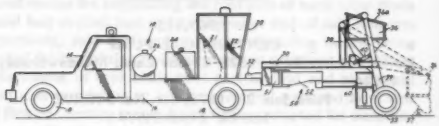
control means for the auger drive means, including a separate sensor for each auger, each of which is mounted on the paving machine adjacent the outboard end of its auger for measuring changes in the level of the paving material deposited onto the surface below the sensor and producing a signal proportional to said changes, and means operatively connected to said sensor which is responsive to the signal indicating changes in the level of the paving material at the sensor, for proportionally and substantially instantaneously increasing the drive speed of the associated auger as the level drops and proportionally and substantially instantaneously decreasing the drive speed of such auger as the level rises, whereby the feed conveyors and the augers are continuously being independently and automatically driven at speeds proportional to the demand for paving material at the discharge ends thereof.

3,967,913

ASPHALT ROADWAY PATCHING APPARATUS

Gifford W. Gabriel, Jr., 8198 S. Marshall St., Littleton, Colo. 80123

Filed Dec. 16, 1974, Ser. No. 533,158
Int. Cl.² E01C *19/18*
U.S. Cl. 404—109 **7 Claims**



1. In an asphalt pavement patching vehicle having a supply hopper provided with an outlet and a small distribution hopper mounted on an articulated arm for distributing small portions of asphalt material from said supply hopper to a predetermined area comprising:

a. auger means mounted in the supply hopper arranged to move material to said outlet and said outlet being positioned for depositing the asphalting material into the distribution hopper, said auger means including a central tube member supporting helical flights for movements of material;

b. burner means extending internally of and along said tube member for heating said tube member and the asphalting material surrounding said tube member;

c. frame means for the supply hopper arranged for supporting the same in an elevated position on the vehicle for supplying asphalting material to said distribution hopper by gravity and constructed for lowering the supply hopper to ground level permitting filling of the same with a conventional dump truck; and

d. means mounted between said frame means and said supply hopper for moving the supply hopper to and from ground level to its elevated position.

3,967,914

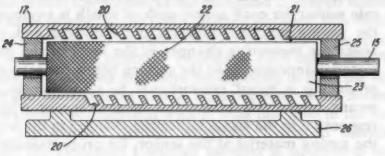
POWER GENERATING SYSTEM

Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 402,064, Oct. 1, 1973, abandoned, which is a division of Ser. No. 196,478, Nov. 8, 1971, Pat. No. 3,800,528. This application Jan. 6, 1975, Ser. No. 538,527

Int. Cl.[2] F04D 19/00

U.S. Cl. 415—90 14 Claims



1. A turbine comprising

a stator having a cylindrical bore;

a cylindrical rotor coaxially journalled in said stator and provided with a substantially uniformly rough lateral surface; and

an output shaft secured to the rotor and projecting axially from one end of the rotor;

said stator being provided with a motive fluid inlet port near one end of the rotor and with a motive fluid outlet port near the other end of the rotor; and

the inner wall of said stator being provided with a continuous oblique helical groove over that portion of the inner wall which is coextensive with the lateral surface of the rotor, one end of said groove communicating with said inlet port and the other end of said groove communicating with said outlet port.

3,967,915

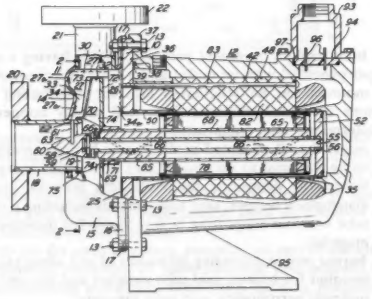
CENTRIFUGAL PUMP

David P. Litzenberg, 1528 Bryant Lane, Meadowbrook, Pa. 19046

Filed Jan. 27, 1975, Ser. No. 541,492

Int. Cl.[2] F04D 29/44

U.S. Cl. 415—209 9 Claims



1. A centrifugal pump for liquids comprising

a pump casing having a liquid inlet connection and a liquid delivery connection communicating with the interior thereof,

a rotatably mounted centrifugal liquid impeller in said pump casing with which said inlet connection is in communication, and

said impeller having a plurality of impeller blades between two spaced outwardly extending shrouds and said shrouds being spaced from said pump casing,

said pump casing having said inlet connection longitudinally alined with the rotational axis of said impeller,

said pump casing having the interior thereof concentric with the rotational axis of said impeller, and

a cut-water plate member mounted in said casing contiguous to said delivery connection for guiding liquid from said impeller and in said casing to said delivery connection,

said plate member extending inwardly from the interior of the casing and having an inner edge extending transversely across the space between said shrouds at the periphery of said impeller and side wings disposed inwardly along said shrouds thereby providing a clearance opening determined by the diameter and width of the impeller and said plate defining with said casing a converging passageway toward said delivery connection.

3,967,916

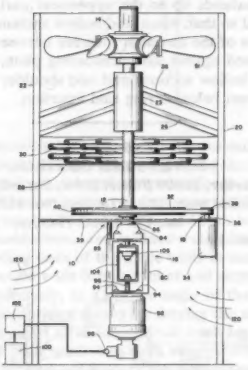
FAN ASSEMBLY

Charles N. Chittom, 728 S. Wheeling, Tulsa, Okla. 74104

Continuation-in-part of Ser. No. 368,820, June 11, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,826

Int. Cl.[2] F04D 29/36

U.S. Cl. 416—167 6 Claims



1. A fan comprising:

a. an elongated rotatable tubular shaft;

b. a fan blade assembly secured to one end of the tubular shaft, said fan blade assembly comprising a hub means secured to the tubular shaft, a plurality of circumferentially spaced outwardly extending fan blades carried by the hub means, each fan blade being rotatable about its own longitudinal axis;

c. elongated axial rod carried by the hub means, and reciprocally disposed inside the tubular shaft, means for operably connecting the axial rod to the fan blades for rotation of the fan blades about their longitudinal axis for changing the pitch of said fan blades when the elongated axial rod is longitudinally moved with respect to the tubular shaft;

d. pitch control means completely supported by the opposite end of the tubular shaft and comprising a first outer housing, a first thrust bearing carried by the outer housing and rotatably secured to the end of the tubular shaft, a linear actuator means secured to the outer housing and oppositely disposed from the first thrust bearing, said actuator means having a movable portion, a second hous-

ing disposed within the outer housing, a second thrust bearing carried by the second housing rotatably secured to the end of the axial rod, the movable portion of the actuator means secured to the second housing and oppositely disposed from the second thrust bearing;

e. means connected to the linear actuator means for reciprocally moving the second housing with respect to the outer housing, thereby reciprocally moving the axial rod with respect to the tubular shaft said movement being parallel to the centerline axis of the tubular shaft for changing the pitch of the fan blades.

3,967,917

PROCESS AND EQUIPMENT FOR LIFTING SECONDARY LIQUIDS WITH THE ENERGY OF PRIMARY LIQUIDS

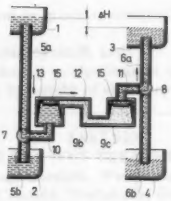
Janos Pucher, and Antal Schmieder, both of Budapest, Hungary, assignors to Nikex Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary

Continuation of Ser. No. 423,583, Dec. 10, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,700

Claims priority, application Hungary, June 19, 1970, PU 171

Int. Cl.² F04B *1/06*, *43/06*

U.S. Cl. 417—54 **8 Claims**



1. A process for elevating a secondary liquid with the potential energy of a falling primary liquid through energy exchange between the primary and secondary liquids in a plurality of vessels in which the primary and secondary liquids move with reciprocating motion and in which the intermixing of said primary and secondary liquids is prevented, comprising lifting the secondary liquid in two stages comprising a pressure stage and a suction stage, discharging said secondary liquid from said system during said pressure stage, drawing said primary liquid into said system during said pressure stage, drawing said secondary liquid into said system during said suction stage, discharging said primary liquid from said system during said suction stage, increasing the elevation of a portion of said primary liquid to increase the potential energy thereof, then decreasing the elevation of said portion of primary liquid to effect said suction stage of said secondary liquid, and disposing between said primary and secondary liquids a vertically movable weight means that separates said liquids from each other and whose potential energy is increased by said upward movement of a portion of said primary liquid and whose downward movement effects said suction stage of said secondary liquid, said primary and secondary liquids being continuously in contact with said weight means whereby vertical movement of said weight means transfers energy between said liquids.

3,967,918

ROTOR FOR ROTATING WING TYPE AIRCRAFT

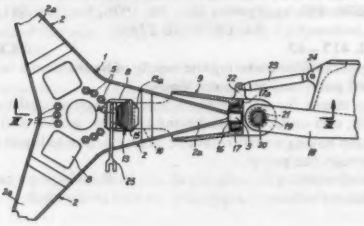
René Louis Mouille, Aix-en-Provence; René Louis Coffy, Marseille; Michel Aimé Hancart, Marignane, and Daniel Mao, Marseille, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed May 10, 1974, Ser. No. 469,045

Claims priority, application France, May 10, 1973, 73.16887; Mar. 7, 1974, 74.7776

Int. Cl.² B64C *27/38*

U.S. Cl. 416—141 **12 Claims**



1. A rotor for a rotating-wing craft comprising a driving shaft, a flat star-shaped rotor hub made of resin-reinforced glass fibres and substantially extending in a plane perpendicular to said driving shaft, said rotor having a central part adapted for being secured to the end of said driving shaft and a plurality of flat arms extending each from said hub central part substantially along a radial axis in said plane, said hub central part and flat arms having, in the direction perpendicular to said plane, respective thickness of substantially different values so that said central part is rigid and said flat arms are flexible in said direction, a same plurality of rotor blades having each a root part, disposed in closed relationship to the outer end of one of said hub arms, each rotor blade extending from its root part substantially along said radial axis, first and second means for connecting the root part of each rotor blade to said hub central part and to the outer end of said hub arm respectively, said first and second connecting means being adapted for permitting resiliently limited rotations and sliding displacement of said blade root part around and along said radial axis in relation to said hub central part and arm, and said first connecting means being further adapted for transmitting centrifugal radial forces from said rotor blade directly to said rigid hub central part, whereby flapping movements of the rotor blades in said direction are permitted by the flexible hub flat arms and said connecting means.

3,967,919

COMPOUND TURBINE ROTOR

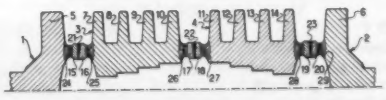
André Coulon, and René Perrin, both of Belfort, France, assignors to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Paris, Cedex, France

Filed Apr. 18, 1975, Ser. No. 569,435

Claims priority, application France, May 21, 1974, 74.17627

Int. Cl.² F01D *5/06*

U.S. Cl. 416—198 A **4 Claims**



1. In a turbine rotor constituted by an axial succession of elements welded to one another and each comprising a blade bearing block, provided with at least one axial protuberance,

in the form of a body having a substantially circular cross-section, to which is welded a similar axial protuberance of an adjacent element, the improvement wherein: said axial protuberance is made of a steel different from that constituting said block and is joined to that block by a transition zone also made of steel.

3,967,920

HORTICULTURE SPRAYING SYSTEMS

Raymond G. Hill, P. O. Box 1043, Victoria, Tex. 77901

Division of Ser. No. 502,074, Aug. 30, 1974, Pat. No. 3,894,690. This application May 29, 1975, Ser. No. 581,905

Int. Cl.² F04B *21/00*

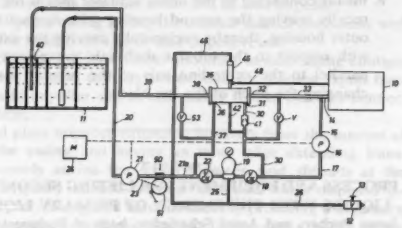
U.S. Cl. 417—63 **4 Claims**

1. Apparatus for metering the supply of liquid from a supply tank and pump means, comprising

pump means for discharging a fluid through an outlet conduit, said outlet conduit having a flexible section and said pump having a shaft rotatable in proportion to liquid flow through the pump,

means for timing the rotation of said shaft including a timing element rotatively supported on said pump shaft,

means responsive to pressure in said flexible section for selectively coupling said timing element to said pump shaft, and



means responsive to rotation of said timing element for producing an indication of pressure existant in said flexible section.

3,967,921

SOLID, NON-DUSTY DYESTUFF-FOAMS OF ANY DESIRED SHAPE AND SIZE

Roland Häberli, Wurenlingen, and Hans Mollet, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 9, 1973, Ser. No. 377,882

Claims priority, application Switzerland, Aug. 1, 1972, 11385/72

Int. Cl.² C09B *67/00*

U.S. Cl. 8—93 **5 Claims**

1. A solid foam dyestuff composition, comprising 10 to 99% by weight of a dyestuff, 0.1 to 20% by weight of a foaming agent, and up to 80% by weight of a bonding agent selected from the group consisting of dextrin, starch, gelatin, alginates, lignin sulphonates, polyacrylates, polyacrylamides, polyvinylpyrrolidone, and water glass, wherein all components of the composition are readily soluble in water.

3,967,922

GRANULAR DYESTUFF PREPARATIONS BASED ON POLYVINYLALCOHOL AS THE CARRIER

Karlheinz Wolf, Leverkusen; Reinhold Hörnle, Cologne; Hans Künzelmann, and Theodor Hild, both of Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 8, 1974, Ser. No. 495,902

Claims priority, application Germany, Aug. 16, 1973, 2341292

Int. Cl.² C08F *116/06*; C09B *67/00*

U.S. Cl. 8—93 **4 Claims**

1. A pulverulent or granular composition consisting essentially of

a. a water-soluble dyestuff; and

b. polyvinyl alcohol in the amount of from about 5% to about 100% by weight of said dyestuff.

3,967,923

PROCESS FOR THE WET TREATMENT OF TEXTILES

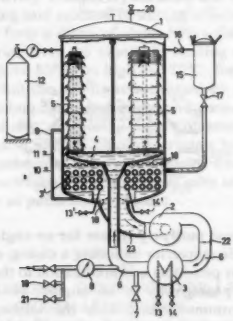
Bernhard Ameling, Coesfeld, Westphalia, Germany, assignor to Thies KG, Coesfeld, Westphalia, Germany

Filed Nov. 27, 1974, Ser. No. 527,801

Claims priority, application Germany, Dec. 1, 1973, 2359974

Int. Cl.² D06B *5/18*

U.S. Cl. 8—149.1 **13 Claims**



1. A process for the wet treatment of textiles by a treating liquor in a pressure-tight container suitable for use at high temperatures comprising the steps of:

suspending said textile material above said liquor;

subjecting said textile material to the flow of said treating liquor under pressure and elevated temperature outwardly from inside through the textile material to flow therethrough laterally at an angle to the vertical and down on the outside of the textile material below it and

pumping back said treating liquor into the interior of said textile material and said treating liquor is from about 1:3 to about 1:6, respectively.

3,967,924

COMPOSITION FOR USE IN THE DYEING OF POLYESTER FIBERS

Cyril Hobday, Manchester, and Ian Michael Price, Glossop, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,098

Claims priority, application United Kingdom, Jan. 23, 1974, 3042/74; Aug. 8, 1974, 35060/74

Int. Cl.² D06P *5/04*

U.S. Cl. 8—169 **10 Claims**

1. A composition for use in the substantially crease-free dyeing of polyester fibres, said composition comprising a dyeing assistant, which is a phenoxy alkanol where the benzene ring is substituted by one or two chlorine atoms and a surface-active glyceride which is one produced by oxidation of a polyunsaturated oil followed by treatment with an alkali metal salt of an oxyacid of sulphur.

10. A process for the substantially crease-free dyeing of polyester fibres which comprises contacting the fibres with a dyebath containing a disperse dye in the presence of a non-foaming composition comprising a dyeing assistant, which is a phenoxy alkanol where the benzene ring is substituted by one or two chlorine atoms and a surface-active glyceride which is one produced by oxidation of a polyunsaturated oil followed by treatment with an alkali metal salt of an oxyacid of sulphur.

3,967,925

CATIONIC DYEING OF NOVOLOID FIBERS

James Economy, Eggertsville, and George Y. Lei, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,658

Int. Cl.² D06P *5/04*

U.S. Cl. 8—173 **14 Claims**

1. A composition for dyeing novoloid fibers, said composition comprising from about one to about ten percent cationic dye based upon fiber weight, from about three to about ten volume percent carrier medium, from about one to about ten volume percent formic acid, from about one to about five volume percent acetic acid, from about one to about four weight percent electrolyte, and water.

3,967,926

METHOD FOR INHIBITING THE CORROSION OF METALS WITH VAPOR PHASE INHIBITORS DISPOSED IN A ZEOLITE CARRIER

Iosif Lvovich Rozenfeld, ulitsa Gubkina, 4, kv. 96; Viveya Pavlovna Persiantseva, ulitsa Krasikova, 19, kv. 3; Jury Igorevich Kuznetsov, ulitsa Dovatora, 1/28, kv. 7, and Nikolai Mikhailovich Petrov, ulitsa Petrovka, 20, kv. 30, all of Moscow, U.S.S.R.

Filed Nov. 9, 1973, Ser. No. 414,428

Int. Cl.³ C23F *11/02*, *11/14*

U.S. Cl. 21—2.5 B **7 Claims**

1. A method for inhibiting the atmospheric corrosion of metals in a sealed space with a corrosion-inhibiting amount of vapor phase inhibitors consisting of disposing in said sealed space a carrier means for diffusing the vapors of said inhibitors, said carrier means consisting of zeolites, and said carrier means containing a liquid inhibitor selected from the group

consisting of primary, secondary and tertiary amines, and mixtures thereof.

3,967,927

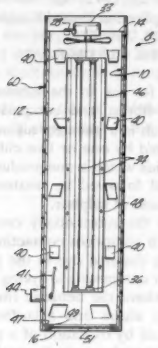
DECORATIVE ULTRAVIOLET LAMP FIXTURE

Lawrence Patterson, 28745 Berrywood Lane, Farmington Hills, Mich. 48024

Continuation-in-part of Ser. No. 514,600, Oct. 11, 1974, which is a continuation-in-part of Ser. No. 374,576, June 28, 1973, Pat. No. 3,846,072. This application Nov. 25, 1974, Ser. No. 527,048

Int. Cl.[2] A61L 9/00

U.S. Cl. 21—74 R 5 Claims



1. An ultraviolet lamp fixture for purifying the air within a room, said fixture comprising:

a floor-to-ceiling tension supported pole;

a housing having a plurality of upright side walls;

means fastening a first of said housing walls to said tension supported pole such that said housing is supported in an upright position when said tension supported pole is positioned between a floor and a ceiling;

the lower portion and the upper portion of said housing being opened and respectively defining an air brake and an air outlet with the interior of said housing defining an air passageway between said air inlet and said air outlet;

a motorized fan releasably supported at said housing outlet for drawing air through said air intake into the interior of said housing and exhausting said air through said air outlet defined at the top of said housing;

means releasably securing said motorized fan between a pair of opposing side walls defining said housing;

a plurality of ultraviolet ray tubes mounted in said housing in said air passageway between said air inlet and said air outlet;

bracket means attached to adjacent side walls of said housing for supporting said tubes in an upright fashion in said air passageway;

a portion of a second of said side walls of said housing being pivotally attached to said housing to define an access door of a length at least equal to the length of said tubes to permit access to the interior of said housing to permit the dusting of the outer surfaces of said ultraviolet ray tubes without removing said tubes from said housing;

a circular decorative covering opened at opposite ends and encircling said housing and concealing the same, said cover being slidably movable with respect to said housing to permit removal of said covering from said housing to gain access to said door; the space between said first-mentioned side wall of said housing and the opposing inner surface of said decorative cover being of a sufficient distance to permit the passage of said tension supported pole; said decorative cover being releasably secured to said tension pole at spaced locations opposite said first-mentioned side wall.

3,967,928

METHOD FOR QUANTITATIVELY ANALYZING SUBSTANCES CONTAINING ELEMENTS OTHER THAN CARBON, HYDROGEN AND OXYGEN AND VOLATILE ORGANIC COMPOUNDS

Donald D. Schmidt; Gary L. Jewett; Richard G. Melcher, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 22, 1974, Ser. No. 454,032

Int. Cl.[2] G01N 31/06, 23/00

U.S. Cl. 23—232 R 10 Claims

1. A method of quantitatively analyzing substances having a vapor pressure of at least 1 Torr at room temperature, said substances containing elements other than carbon, hydrogen and oxygen said method comprising the sequential steps of (1) adsorbing directly from the atmosphere and untreated sample of said substances on a particulate, substantially dust and contaminant free carbonized product prepared by (A) first partially dehydrochlorinating a normally crystalline vinylidene chloride polymer at temperatures less than the melting point of said polymer to an extent of at least about 5 percent of theoretical HCl loss, then (B) completing the dehydrochlorination of the partially dehydrochlorinated polymer, in the substantial absence of oxygen, by heating said polymer to carbonizing temperatures from about 600°C to about 1200°C, then (2) quantitatively analyzing for said substances while said substances remain adsorbed on said carbonized material.

3,967,929

EXHAUST GAS PURIFYING SYSTEM

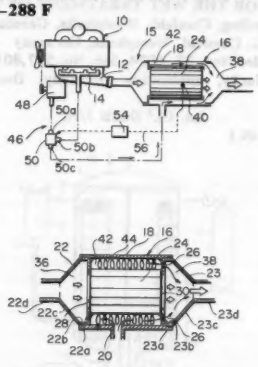
Tsuyoshi Tamazawa, and Hiroshi Yaguchi, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 8, 1974, Ser. No. 431,606

Claims priority, application Japan, Jan. 13, 1973, 48-6832

Int. Cl.[2] B01J 8/04; F01N 3/15; B01J 8/02, 8/00

U.S. Cl. 23—288 F 10 Claims



1. An exhaust purifying system for an engine, comprising;

a. a catalytic converter including a casing, exhaust gas inlet means for providing communication to the casing from an exhaust passageway of an engine, an outlet from the casing communicating with the atmosphere, catalytic means disposed in the casing and including an outer peripheral wall to provide a cooling chamber disposed between an inner circumference of the casing and the outer peripheral wall of the catalytic means, means spacing said catalytic means from the inner circumference of the casing, and an air inlet communicating with the space between the inner circumference of said casing and said catalytic means;

b. means defining an upstream opening of the catalytic means communicating with the exhaust gas inlet means

and defining a downstream opening of the catalytic means communicating with the outlet to provide an inlet chamber between the exhaust gas inlet and the upstream opening of the catalytic means and an outlet chamber between the outlet and the downstream opening of the catalytic means, said exhaust gas inlet and outlet chambers being disposed at mutually spaced ends of said casing and of said outer peripheral wall;

c. a source of air;

d. a valve having an inlet communicating with the source of air and having a first outlet communicating with said cooling chamber through said air inlet, whereby air passing into said cooling chamber via said air inlet is in direct heat-exchange contact with the catalytic means; and

e. means, including temperature sensing means for feeding a signal to the valve when the temperature in the catalytic converter is above a predetermined level at which the activity of the catalyst means degenerates, to normally block communication between the source of air and said air inlet via the valve, and to selectively establish communication between the source of air and said air inlet via the valve in response to said electrical signal.

3,967,930

SEPARATION OF COMPLEX POTASSIUM SALTS FROM BRINE EVAPORITES

Abraham Sadan, Salt Lake City, Utah, assignor to N L Industries, Inc., New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,485
Int. Cl.² B01D *9/04*; C01D *5/00*
U.S. Cl. 23—296 **6 Claims**

1. Process for separating kainite from a mixture of salts comprising essentially kainite and sodium chloride characterized by relatively coarse crystals comprising: slurrying said mixture of salts in a $MgCl_2$ brine, heating the slurry to temperatures above about 80°C. for a predetermind period of time such that said kainite only of said mixture of salts is converted by recrystallization to relatively fine crystals of langbeinite and carnallite in said slurry and thereafter subjecting the slurry to a particle size dependent separation process whereby the fine recrystallized langbeinite and carnallite are separated from the remaining relatively coarse crystalline salts.

6. In a process for producing potassium sulfate from salt deposits derived from naturally occurring brines wherein said salts comprise essentially a mixture of kainite and sodium chloride of relatively coarse crystal size the improvement comprising: adding said mixture of salts to a brine of from 28 to 32% $MgCl_2$ to form a slurry of about 50% solids, separating the sodium chloride from the kainite by heating said slurry to a temperature above 80° to as high as 120°C. for from one to two hours such that the kainite is converted by recrystallization to the potassium salts langbeinite and carnallite of relatively fine crystal size, separating these potassium salts from the relatively coarse sodium chloride crystals by elutriation, recovering the potassium salts substantially free of sodium chloride and then treating said potassium salts to recover the potassium values as potassium sulfate.

3,967,931

FLAME AEROSOL DETECTOR FOR LIQUID CHROMATOGRAPHY

Richard S. Juvet, Jr., Phoenix, Ariz., and Richard A. Mowery, Jr., Bartlesville, Okla., assignors to Research Corporation, New York, N.Y.

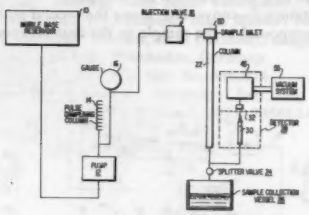
Filed Sept. 25, 1974, Ser. No. 509,258
Int. Cl.² G01N *31/08*, *31/12*
U.S. Cl. 23—230 PC **22 Claims**

1. A method of detecting components eluted from a liquid chromatograph comprising the steps of:

producing a liquid aerosol from a liquid sample eluted from said chromatograph,

ionizing at least a portion of said liquid aerosol,

filtering said ionized liquid aerosol to remove unwanted ionic species; and,



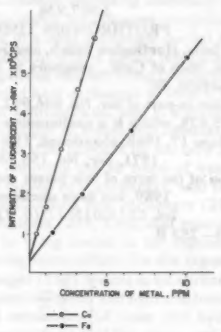
sensing variations in the current formed by the ionized liquid aerosol subsequent to said step of filtering whereby said components are detected.

3,967,932

RAPID ANALYSIS OF CATION CONTAINED IN LIQUID

Takezo Sano, Takatsuki, and Akira Kobayashi, Ibaragi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 10, 1975, Ser. No. 621,344
Int. Cl.² G01N *31/04*, *23/223*, *23/10*
U.S. Cl. 23—230 R **12 Claims**



1. A method for the rapid analysis of a cation contained in a liquid, which comprises filtering a liquid sample through a cation exchange filter paper having a high rate of ion exchange, which is composed of fibers having cation exchange functional groups, thus collecting in the top surface layer of said filter paper substantially the entire amount of the cation contained in said liquid sample, and analyzing the cation-loaded filter paper as such or the eluate obtained by elution of the objective cation from said cation-loaded filter paper to determine the cation.

3,967,933

DUAL CHANNEL NITROGEN OXIDES ANALYZER

Edward Etess, La Jolla, and Allan L. Budd, San Diego, both of Calif., assignors to Monitor Labs, Inc., San Diego, Calif.

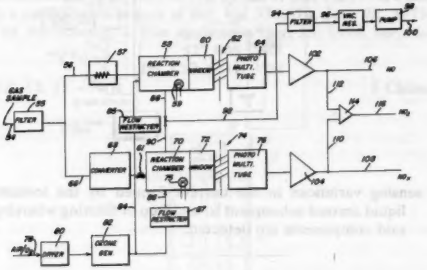
Filed May 23, 1974, Ser. No. 472,698
Int. Cl.² G01N *33/00*
U.S. Cl. 23—232 E **10 Claims**

9. A method for measuring first and second compounds in a gas mixture sample, the method comprising the following steps:

continuously introducing the sample along two parallel paths;

continuously reacting the sample, along a first path, with a preselected reactant for causing chemiluminescence of the first compound in the sample;

continuously converting, along the second path, the second compound in the sample to the first compound;



continuously reacting, along the second path, the first compound with the reactant to cause chemiluminescence of the first compound;

continuously measuring the light emission from the first and second path chemiluminescence for determining the concentrations, in the mixture, of the first and second compounds.

3,967,934

PROTHROMBIN TIMER

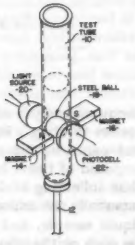
Lamont J. Seitz, Huntington Beach, and John G. Bowen, South Pasadena, both of Calif., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 846,992, June 13, 1969, Pat. No. 3,635,678, which is a continuation-in-part of Ser. No. 738,382, June 17, 1968, abandoned. This application June 25, 1971, Ser. No. 156,740

The portion of the term of this patent subsequent to Jan. 16, 1989, has been disclaimed.

Int. Cl.[2] G01N *11/10, 33/16*

U.S. Cl. 23—253 R **1 Claim**



1. Apparatus for use in determining the prothrombin time of a blood sample comprising: a container for holding the blood sample, a freely movable ferromagnetic member disposed in the container, a magnetic field source located near the container and forming a weak magnetic couple with the ferromagnetic member, means for producing relative movement between the ferromagnetic member and the container, the intensity of the magnetic field source being sufficient to prevent relative movement between the ferromagnetic member and the magnetic field source prior to clotting but insufficient to prevent relative movement between the ferromagnetic member and the magnetic field source on clotting due to an increase in the resistance to movement of the ferromagnetic member in the container imposed on the ferromagnetic member by the blood sample, and means for deriving a signal in response to relative movement between the ferromagnetic member and the magnetic field source, the signal signifying the end point in determining the prothrombin time.

3,967,935

CORROSION AND WEAR RESISTANT STEEL SINTER ALLOY

Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Gesellschaft mit beschrankter Haftung, Krefeld, Germany

Filed Sept. 5, 1973, Ser. No. 394,475

Claims priority, application Germany, Sept. 11, 1972, 2244470

Int. Cl.[2] C22C *29/00*

U.S. Cl. 29—182.7 **4 Claims**

1. A corrosion-resistant and wear-resistant steel sinter alloy consisting essentially of 33% by weight titanium carbide, and 67% by weight of a ferritic steel matrix of the composition:

chromium	28.00%
molybdenum	2.00%
copper	0.50%
niobium	0.50%
aluminum	0.60%
titanium	0.30%
boron	0.01%
iron	balance.

3,967,936

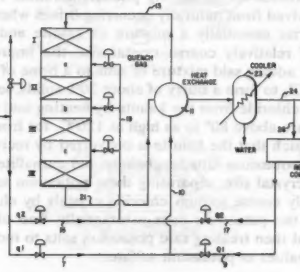
METHANATION PROCESS UTILIZING SPLIT COLD GAS RECYCLE

Daniel G. Tajbl, Evanston; Bernard S. Lee, Lincolnwood; Frank C. Schora, Jr., Palatine, all of Ill., and Henry W. Lam, Rye, N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 538,061

Int. Cl.[2] C10K *3/04*

U.S. Cl. 48—197 R **3 Claims**



1. A process for the methanation of feed gas in a series of at least two catalytic reaction zones each of said zones being separated by a quench zone wherein effluent from each of said reaction zones, except the last zone, is passed through a quench zone and into the succeeding reaction zone which comprises splitting said feed gas comprised of carbon monoxide and hydrogen into a first feed and a second feed, cooling product gas from the last of said reaction zones and splitting a portion of said cooled product gas into a first cold recycle gas and a second cold recycle gas, mixing said first cold recycle gas with said first feed gas, preheating said mixture of first feed gas and first cold recycle gas to a temperature sufficient to initiate the methanation reaction and prevent carbonyl formation and passing said gas mixture to the first reaction

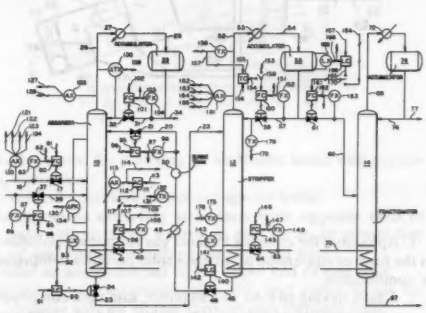
zone, the ratio of said first feed gas to said first cold recycle gas being selected to provide a gas mixture containing a carbon monoxide and hydrogen content which upon methanation produces insufficient heat to raise the gas temperature above the upper safe operating temperature of the catalyst in said first reaction zone, mixing said second feed gas and said second cold recycle gas to form a quench stream and passing said quench stream into the quench zone for admixture with the reaction zone effluent to provide a resultant gas mixture having a temperature sufficient to initiate methanation reaction and prevent carbonyl formation on the catalyst, the ratio of said second feed gas to said second cold recycle gas being selected to provide a quench stream having a carbon monoxide and hydrogen content which upon methanation produces insufficient heat to raise the gas temperature above the upper safe operating temperature of the catalyst.

3,967,937

ABSORPTION PROCESS METHOD AND APPARATUS

James W. Hobbs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 30, 1974, Ser. No. 474,405
Int. Cl.² B01D *53/14*
U.S. Cl. 55—18 **49 Claims**



1. A method of operating an absorption process wherein a product constituent of a feed material is absorbed by an absorption medium and removed with said absorption medium as a bottoms product from an absorption zone, said method comprising:

establishing a first signal responsive to the concentration of said product constituent leaving said absorption zone in an overhead stream;

establishing a second signal responsive to the concentration of said product constituent in the feed entering said absorption column;

establishing a third signal representative of the maximum allowable flow rate of said absorption medium into said absorption zone;

establishing a mode control signal having a first condition indicative of the need for a maximum rate of production of said product constituent and a second condition indicative of the absence of a need for maximum product constituent production; and

responsive to said first condition of said mode control signal:

controlling the flow of said absorption medium into said absorption zone in response to said third signal;

generating from said first signal, said second signal, and said third signal, a fourth signal representative of the optimum flow rate of said feed material into said absorption zone; and

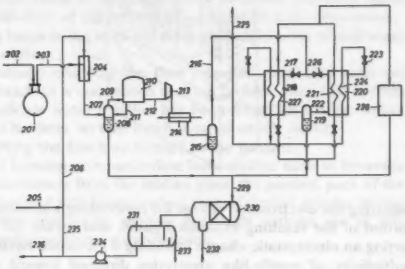
controlling the flow of said feed material into said absorption zone in response to said fourth signal.

3,967,938

PROCESS FOR THE SEPARATION OF A GASEOUS MIXTURE CONSISTING OF WATER VAPOR, HYDROCARBONS, AND AIR

Werner Daeschler, Munich; Hans-Jakob Finkenauer, Mainz-Weisenau; Gerhard Frey, Munich; Hans Rainer, Munich, and Walter Schramm, Munich, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed July 22, 1974, Ser. No. 490,876
Claims priority, application Germany, July 20, 1973, 2337055; Oct. 5, 1973, 2350115; Oct. 5, 1973, 2350114; Dec. 20, 1973, 2363504
Int. Cl.² B01D *53/02*
U.S. Cl. 55—30 **4 Claims**



1. A process for the separation of hydrocarbons from a compressed gaseous mixture consisting essentially of air, hydrocarbons and water vapor, said process comprising cooling said gaseous mixture in a heat exchanger cooled by indirect heat exchange relationship with a closed refrigeration cycle, said cooling of said gaseous mixture being conducted in a first stage within said cooled heat exchanger to form a liquid condensate of water and hydrocarbons, and in a second stage in said cooled heat exchanger to freeze out residual hydrocarbons and water to form solid deposits on the tube surfaces of the heat exchanger; removing the air freed of water and hydrocarbon from said cooled heat exchanger, said cooled heat exchanger being a regenerated heat exchanger (220) of two alternating heat exchangers (218, 220), said gaseous mixture to be treated, prior to being cooled in the regenerated heat exchanger (220) having been utilized for the regeneration of the other heat exchanger (218) loaded in an earlier switching phase to melt off frozen-out water and hydrocarbons; recovering resultant melted condensate of water and hydrocarbons and the liquid condensate from said first stage, and separating water from resultant liquid phases to recover said hydrocarbons.

3,967,939

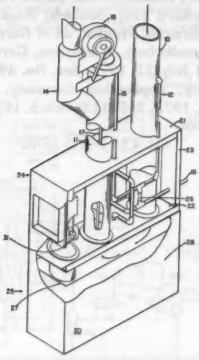
ELECTROSTATIC SCRUBBER-PRECIPITATOR

Addison B. Scholes, and Bruce F. Semans, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 404,450, Oct. 9, 1973, Pat. No. 3,919,391.
This application Apr. 24, 1975, Ser. No. 571,162
Int. Cl.² B03C *3/16*
U.S. Cl. 55—108 **1 Claim**

1. An apparatus for removing hot exhaust treatment gases containing hydroscopic materials including tin and titanium compounds, which comprises; means for exhausting and wetting the treatment gases, said means for wetting including a conduit with at least one pair of nozzles for directing a fluid treatment liquid sprays, a reservoir of liquid and situated above said reservoir and beneath said conduit for impringement of the gas and collecting at least some of the materials exhausted therethrough, means for imparting to the remaining treated materials an electrostatic charge, said imparting means including conduit means being positioned above said reservoir of fluid and spaced from said conduit, and means

providing a liquid advancing collecting surface proximate said conduit means for removing the charged particles, said surface presenting a descending fluid film circumferentially of said conduit means, and means within the conduit means for



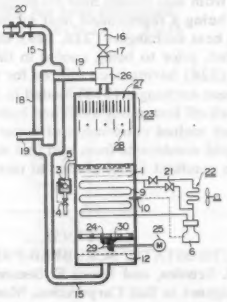
imparting the electrostatic charge for condensing a substantial portion of the resulting exhausted gases, said means for imparting an electrostatic charge including a electrode having a multiplicity of needle-like electrodes directed toward said descending fluid film.

3,967,940

APPARATUS FOR COOLING AND DEHUMIDICATION OF COMPRESSED AIR

Itsuro Hirano; Mitsuru Uchiyama, and Masao Satoh, all of Tokyo, Japan, assignors to BF Kogyo Kaisha, Ltd., Tokyo, Japan

Filed June 13, 1975, Ser. No. 586,841
Int. Cl.² B03C 3/12
U.S. Cl. 55—122 **3 Claims**



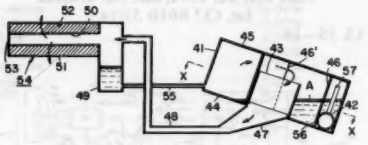
1. Apparatus for dehumidification of compressed air comprising a cooling tank (2), said tank having a lower portion adapted to be filled with cooling water, inlet means (15) for compressed air connected to said tank at the lower end thereof, a heat exchange coil pipe (9) located in said lower portion of said tank for receiving therethrough a cooling medium for cooling the cooling water, supply means (12) within said lower portion of said tank to form air introduced through said inlet means into bubbles as the air passes through the cooling water and outlet means (19) for compressed air connected to said tank at the upper end thereof, characterized in that dehumidification means (23) in the form of an electrostatic dust collector is provided in the upper portion of said tank for dehumidifying and cleaning air cooled by the cooling water, said dehumidification means including an ionizing portion (28) and a collecting portion (27) positioned above said ionizing portion, said collecting portion including a plurality of facing pole plates, one side of each facing pole plate being coated with an insulator material.

3,967,941

EXHAUST GAS LIQUID CONTACTOR

Kunio Terao, Kanagawa, Japan, assignor to Okamura Manufacturing Company Limited, Yokohama, Japan

Continuation of Ser. No. 186,677, Oct. 5, 1971, abandoned.
This application Apr. 8, 1974, Ser. No. 458,888
Int. Cl.² B01D 47/02
U.S. Cl. 55—222 **1 Claim**



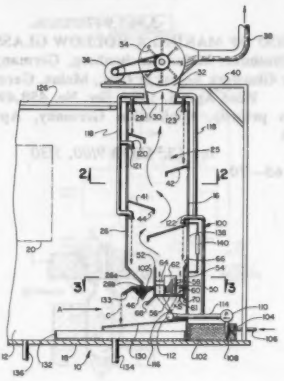
1. Apparatus for cleaning exhaust gas containing pollutants in the form of suspended particulate solid particles comprising in combination:

1. A tank having an inlet and an outlet, said tank comprising a substantially circular outer casing, said gas inlet pipe being tangentially connected to the lower portion of said tank; an inner cylinder erected in the center of said outer casing, said inner cylinder being slightly lower in height than said casing, and an arc-shaped air guide plate extending from an inside end of said gas inlet pipe in the outer casing to the outer peripheral face of said inner cylinder, and the bottom end of said inner cylinder being connected to the cooling means;
2. A gas inlet pipe connected to said tank and adapted to be connected to a source of heated gas containing pollutants;
3. A body of liquid within said tank, said gas inlet pipe being arranged relative to said body of liquid to insure gas-liquid contact to cause vaporization of said liquid and to form an intimate mixture of hot gas and liquid vapor;
4. An elongate gas outlet pipe, connected at one end thereof to said tank outlet, said outlet pipe having a length selected to make the said suitable to cool said mixture below the dew point of the liquid vapor so as to form droplets of liquid in the gas, the solid particulate material suspended in the gas serving as nuclei for the formation of such droplets; and
5. A filter connected to the other end of said elongate gas outlet pipe remote from said tank, said filter being adapted for separating the liquid droplets from the gas, whereby the solid particles, which would otherwise be too fine to be removed directly from the gas, are retained by the filter as the nuclei of the relatively larger liquid droplets, so that undesirable particulate material can be readily removed from an exhaust gas prior to discharge to the atmosphere.

3,967,942
PURIFYING APPARATUS

Barrie Reginald Kirby Pain, Oxford, England, and Gunnar Robert Wilhelmsson, Vaxjo, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Sweden

Continuation-in-part of Ser. No. 329,951, Feb. 2, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,161
Claims priority, application United Kingdom, Feb. 2, 1972, 4922/72
Int. Cl.² B01D *47/06*
U.S. Cl. 55—223 **11 Claims**



1. Apparatus for purifying an air stream laden with impurities, comprising:
- a vertical duct having opposed spaced walls;
- baffle means extending alternately from opposite ones of said walls to define a tortuous path for an air stream free of said impurities passing through said duct;
- outlet means connected to the upper end of said duct;
- suction means communicating with said outlet means for drawing said air stream through said tortuous path;
- inlet means connected to the lower end of said duct, said inlet means comprising:
- vertical plate means supported in said duct;
- a horizontal bottom wall joined in part to said vertical plate means and having at least one slot therein with closely spaced edges for receiving said stream of air laden with impurities;
- an upright guide structure extending from said bottom wall toward said outlet means and spaced between said plate means adjacent said slot, to define a narrow passage leading to said tortuous path; and
- spray means below said bottom wall for directing a conical spray of a washing liquid against the underside of said bottom wall toward said slot as a cone whose maximum diameter just exceeds the extent of said slot whereby said washing liquid is distributed into fine drops by the edges of said slot so that said fine drops of liquid and said air laden with said impurities are mixed intimately to entrain said impurities in said drops.

3,967,943
METHOD OF IMPROVING GLASS BATCH MELTING BY USE OF WATER GLASS

Clarence E. Seeley, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

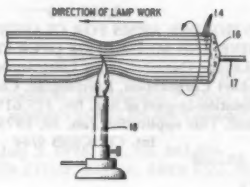
Filed Oct. 30, 1974, Ser. No. 519,084
Int. Cl.² C03B *1/00, 5/16;* C03C *3/04*
U.S. Cl. 65—27 **6 Claims**

1. In the preparation of a glass composition containing Na_2O as an oxide constituent thereof, said composition being melted from a batch of glass making materials including sodium-containing batch materials which upon melting provide the said Na_2O content of said composition,
the improvement comprising,
- preparing an unreacted batch of glass making materials into which sodium silicate water solution is mixed as one of the sodium-containing materials thereof, the amount of sodium silicate water solution being such as to provide about 1–10% of the total Na_2O content of said composition, said batch including the said sodium silicate water solution being prepared at ambient temperature so that the components thereof do not react or set up,
- including in said batch at least one other sodium-containing material in addition to said sodium silicate water solution, the other sodium-containing material being present in said batch in particulate solid form and providing about 90–99% of the total Na_2O content of said composition,
- the batch being semi-wet through the inclusion of said water solution,
- gradually charging the thus prepared unreacted semi-wet batch to a continuous melting furnace after said sodium silicate water solution has been mixed into it but before it hardens, so that batch setup does not occur,
- melting the batch so formed in the furnace,
- and forming non-particulate bulk articles such as beverage containers from the molten glass, the percent pack of the finished articles exceeding that of similar articles having the same oxide analysis but made without use of any sodium silicate water solution.

3,967,944
MILLICANE GLASS AND A METHOD FOR ITS PRODUCTION

Helen Keller, and Raymond J. Keller, both of c/o Springville School, Springville, Pa. 18844

Filed Sept. 3, 1974, Ser. No. 502,386
Int. Cl.² C03G *23/20*
U.S. Cl. 65—36 **10 Claims**



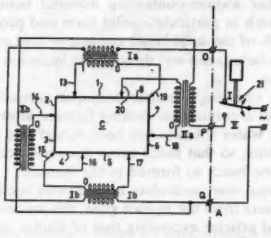
1. A method for fashioning glass objects with a lamp so as to produce millicane surface effects on interior and exterior surfaces of the finished objects utilizing glass rods and a disposable core and following the steps which comprise:
- assembling a sufficient number of said rods lengthwise touching one another and completely encircling said disposable core,
- fusing at one end of said assembled rods all of the free ends thereof in common to join the assembled rods into a rigid unitary structure sustained independently from said core,
- subjecting portions of the assembled rods to heat from said lamp uniformly applied to the outer surfaces of the assemblage of rods to cause adjacent touching portions of said rods to fuse together, and
- shaping said assemblage during said last step simultaneously to fashion glass objects having a contiguous millicane surface effect.

3,967,945

METHOD OF SEALING GLASS OBJECTS TO ONE ANOTHER BY PASSING A CURRENT THROUGH THEM

Theodorus Cornelis Groot, and Johan Josephus Hendricus Bogaard, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 452,150, March 18, 1974, abandoned. This application Feb. 6, 1975, Ser. No. 547,600
Claims priority, application Netherlands, Mar. 19, 1973, 7303770
Int. Cl.² C03B 23/20
U.S. Cl. 65—40 7 Claims



1. A method of sealing glass objects to one another by passing an electric current through portions thereof, said method comprising the steps of:

preheating edges of objects to be sealed, the edges adapted to forming a seal joint;

positioning stationary electrodes about said entire seal joint;

supplying electric current to said electrodes from at least two independent current circuits, each circuit having at least two transformers, the secondary windings of said transformers being connected to said electrodes so that at least some successive electrodes of each circuit have potentials of opposite signs; and

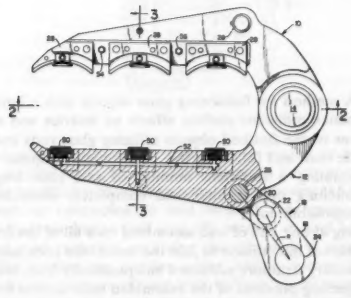
switching said two circuits on and off.

3,967,946

MOLD HOLDER ARMS FOR GLASSWARE FORMING MACHINE AND METHOD OF OPERATING THE SAME

Lyman Lavelle Campbell, East Longmeadow, Mass., assignor to Emhart Corporation, Farmington, Conn.

Continuation-in-part of Ser. No. 315,619, Dec. 15, 1972, abandoned. This application Jan. 20, 1975, Ser. No. 542,089
Int. Cl.² C03B 9/44
U.S. Cl. 65—68 8 Claims



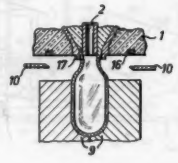
7. A method of applying equal closing pressure on a plurality of glassware forming machine molds each of which comprises complementary halves, there being a plurality of such halves supported along each of a pair of arms pivotally connected at one end on a common axis and the halves on at least one arm being supported for movement relative to the said one arm while being engaged by pressure responsive means movably supported by said one arm, the said method comprising the steps of mechanically moving said arms toward each other to effect forceful engagement of the complementary mold halves and subjecting each pressure responsive means supported on said at least one arm to the same fluid pressure to limit movement of the mold halves relative to the said at least one arm and thereby to control the complementary mold halves in engagement.

3,967,947

METHOD OF MAKING A HOLLOW GLASS ARTICLE

Franz Günthner, Mainz-Lerchenberg, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Apr. 5, 1974, Ser. No. 458,490
Claims priority, application Germany, Apr. 11, 1973, 2318116
Int. Cl.² C03B 9/00, 5/30
U.S. Cl. 65—70 5 Claims



1. Method of making a hollow glass article, which comprises:

a. discharging molten glass from a feeder in the form of a tube closed at one end, into a finishing mold,

b. applying a pressure differential between the interior of the tube and the exterior thereof within the mold by blowing gas into the tube for shaping of the molten glass into the hollow article in the mold,

c. preventing deformation of the tube between the feeder and mold due to said pressure differential by sealing of the feeder against the mold throughout application of said pressure differential,

d. interrupting the blowing of gas into the tube and thereafter lowering of the mold relative to the feeder while the glass between the feeder and mold is still molten so that a neck forms interconnecting the hollow article in the mold and glass in the feeder, and

e. with the mold in the lowered position, severing the glass in the feeder from the hollow article in the mold at said neck, said severing leaving the hollow article with a closed upwardly disposed neck portion and the glass from the feeder with a closed downwardly disposed neck portion.

3,967,948

PURIFICATION OF PHOSPHORIC ACID WITH UREA AND NITRIC ACID

John F. McCullough, Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

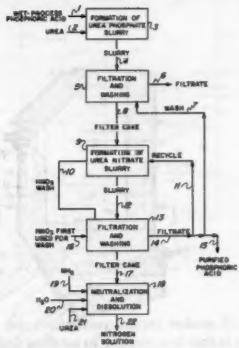
Filed Sept. 29, 1975, Ser. No. 617,699
Int. Cl.² C05C 1/00
U.S. Cl. 71—29 3 Claims

1. A process for the partial or essentially complete purification of wet-process phosphoric acid by use of urea and nitric acid with co-production of nitrogen solution suitable for fertilizer use, which comprises the steps of:

1. mixing wet-process phosphoric acid with about stoichiometric amounts of urea to thereby prepare urea phos-

phate, said urea phosphate containing 50 percent or less of the impurities in the wet-process acid;

2. mixing said urea phosphate with nitric acid while maintaining the temperature of the resulting slurry of urea nitrate in phosphoric acid below 35°C for a period of time from 15 to 60 minutes; wherein for each mole of urea in the urea phosphate, 0.9 to 1.1 moles of nitric acid is used and the concentration of said nitric acid is in the range from 49 to 72 percent by weight;



3. separating the phosphoric acid from the solid urea nitrate in said slurry as product;
4. washing the solid urea nitrate with nitric acid of the same concentration as used in step (2) supra and subsequently using the nitric acid wash solution for reaction with urea phosphate in step (2); and
5. treating the washed urea nitrate with ammonia and water to form a nitrogen solution consisting of urea and ammonium nitrate.

3,967,949
FLUOROALKOXYPHENYL-SUBSTITUTED NITROGEN HETEROCYCLES AS PLANT STUNTING AGENTS

Robert Lee Benefiel, Manila, and Eriks Viktors Krumkalns, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed June 18, 1973, Ser. No. 371,106
Int. Cl.² A01N *5/00*
U.S. Cl. 71—76 **9 Claims**

1. A method of inhibiting the internodal growth of plants which comprises contacting the plants selected from the group consisting of crop plants, ornamental plants, and turf, with an effective growth inhibiting amount of a compound of the formula

wherein
R is 5-pyrimidinyl;
R^1 is isopropyl;
R^2 is trifluoromethoxyphenyl, tetrafluoroethoxyphenyl or pentafluoroethoxyphenyl;
X is hydroxy;
and the nonphytotoxic acid addition salts thereof.

3,967,950
COMBATING WEEDS IN RICE WITH BENZOTHIAZOLE DERIVATIVES

Saburo Kano; Osami Nomura, both of Odawara; Yoshihiko Hirono, Hiratsuka; Hisao Ishikawa, Oiso, and Shozo Yamada, Hiratsuka, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed June 10, 1974, Ser. No. 477,930
Claims priority, application Japan, July 2, 1973, 48-74610
Int. Cl.² A01N *9/22*
U.S. Cl. 71—90 **3 Claims**

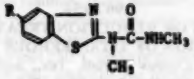
1. A method of combating weeds in rice cultivation which comprises applying to the weed habitat a herbicidally effective amount of 3-(5-methylbenzothiazole-2-il)-1,1,3-trimethylurea.

3,967,951
SELECTIVE HERBICIDES

Yoshihiko Hirono, Hiratsuka; Hisao Ishikawa, Oiso; Shozo Yamada, Hiratsuka; Saburo Kano, and Osami Nomura, both of Odawara, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed Jan. 31, 1974, Ser. No. 438,475
Claims priority, application Japan, Feb. 5, 1973, 48-13768
Int. Cl.² A01N *9/12*
U.S. Cl. 71—90 **5 Claims**

1. A method of combating weeds which comprises applying to the weed habitat an effective amount of a compound of the formula



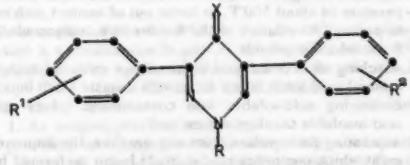
wherein R is selected from the group consisting of isopropyl and tert-butyl.

3,967,952
3,5-DIPHENYL-4(1H)-PYRIDAZINONES(THIONES)

Riaz F. Abdulla, Greenfield, and Quentin F. Soper, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 3, 1975, Ser. No. 593,096
Int. Cl.² C07D *237/18, 237/14;* **A01N** *9/22, 9/12*
U.S. Cl. 71—92 **12 Claims**

1. A compound of the formula:



wherein
X represents oxygen or sulfur;
R represents C_1–C_3 alkyl;
R^1 and R^2 independently represent hydrogen, trifluoromethyl, fluoro, chloro, bromo or methyl.

7. An herbicidal composition which compromises a herbicidally active quantity of a compound of claim 1 and an inert carrier.

3,967,953

ROSE GROWTH STIMULATION

Robert R. MacMurray, Bloomsburg, Pa., assignor to American Agtech, Inc., Bloomsburg, Pa.

Continuation-in-part of Ser. No. 186,508, Oct. 4, 1971, Pat. No. 3,861,901, which is a continuation-in-part of Ser. No. 3,697,253, April 11, 1969. This application Nov. 25, 1974, Ser. No. 526,819

The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.

Int. Cl.[2] A01N *9/20*

U.S. Cl. 71—97 6 Claims

1. A method of stimulating the growth of roses comprising applying thereto a composition including N,N-di-n-propyl-4-trifluoromethyl-2,6-dinitroaniline and 2,4-dichlorophenoxyacetic acid or salt thereof as active ingredients in a combined concentration and amount sufficient to stimulate growth of the roses.

4. The method of claim 1 and cacodylic acid or a salt thereof as an additional active ingredient, the active ingredients being applied in a concentration and amount sufficient to stimulate growth of the roses.

3,967,954

PRE-LEACHING OR REDUCTION TREATMENT IN THE BENEFICIATION OF TITANIFEROUS IRON ORES

James H. Chen, Corpus Christi, Tex., assignor to Benilite Corporation of America, New York, N.Y.

Continuation of Ser. No. 132,806, April 9, 1971, abandoned. This application Sept. 10, 1974, Ser. No. 504,829

Int. Cl.[2] C22B *1/00*

U.S. Cl. 75—1 T 7 Claims

1. In a process for the beneficiation of titaniferous iron ores which comprises the steps of

1. heating said raw material at a temperature of from about 1500°F. to about 2000°F. for from about 10 minutes to about 60 minutes with a reducing agent mixture of
   a. from about 3% to about 5% by weight based upon the weight of the raw material of a cabonaceous reducing agent or hydrogen or mixtures thereof and
   b. from about 0.2% to about 2% by weight based on the weight of the raw material of solid elemental sulfur to convert and lower the ferric oxide contaminant content of the raw material to acid-soluble ferrous oxide and ferrous sulfide, the latter in small amount,
2. rapidly cooling down the reduced raw material to a temperature of about 500°F. or lower out of contact with air to prevent reoxidation of the ferrous iron compounds to ferric iron compounds,
3. leaching the cooled and reduced raw material with a mineral acid leach liquor to provide a waste leach liquor containing acid-soluble iron contaminant values and acid-insoluble titanium values, and
4. separating these values from one another, the improvement which comprises said step (2) being performed by a procedure selected from the group consisting of
   a. quenching the reduced raw material with water,
   b. spraying water directly onto the reduced raw material,
   c. immersing the reduced raw material in a water bath, and
   d. passing the reduced raw material through a water tube cooler in direct contact with a cold metal surface;

whereby the purity of the beneficiated titanium dioxide product of the process is increased.

3,967,955

METHOD FOR TREATING A METAL MELT

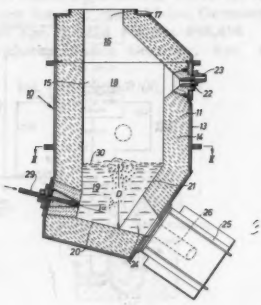
Kåre M. Folgerö; Bengt Fredriksson, both of Vasteras; Lars-Gunnar Norberg, Hagfors, and Karl-Erik Öberg, Borlange, all of Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Apr. 15, 1975, Ser. No. 568,159

Claims priority, application Sweden, Apr. 16, 1974, 74.05030

Int. Cl.[2] C21C *5/52*

U.S. Cl. 75—12 7 Claims



1. A method for treating a bath of molten metal in a reaction vessel having a refractory lining and at least one induction-heated space opening into the lower portion of the reaction vessel, said method comprising the step of injecting into the bath a mixture of gas and a solid material in powder form, said mixture containing at least 5 kilograms of solid material per cubic meter, as measured at normal temperature and pressure, of gas, and being injected through a tuyere extending through the lining and opening into the bath below the surface thereof, the injection being made in a direction between 15° above and 45° below the horizontal direction and at such a velocity and at such a weight rate that the momentum of the solid material corresponds to an injection of at least 0.03 kilogram of solid material per minute per square millimeter of internal cross-sectional area of the tuyère.

3,967,956

SEPARATION OF NOBLE METALS

John Blunden Payne, London, England, assignor to Matthey Rustenburg Refiners (Proprietary) Limited, Johannesburg, South Africa

Filed Dec. 10, 1974, Ser. No. 531,369

Claims priority, application United Kingdom, Dec. 13, 1973, 57796/73

Int. Cl.[2] C22B *11/04*

U.S. Cl. 75—101 BE 36 Claims

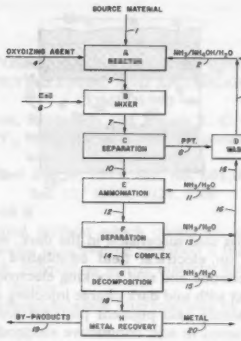
1. A process for the separation and purification of palladium which is present in a solution with at least one other platinum group metal, said process comprising the steps of:

a. adjusting, as necessary, the pH of the solution to render the solution acidic;
b. contacting the so-obtained acidic solution with an oxime solvent; and
c. removing from contact with the acidic solution the organic phase containing substantially all of the palladium present in association with the oxime solvent.

3,967,957
AQUEOUS AMMONIA OXIDATIVE LEACH AND RECOVERY OF METAL VALUES

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 26, 1973, Ser. No. 344,785
Int. Cl.² C22B *15/10, 23/04*
U.S. Cl. 75—103 **6 Claims**

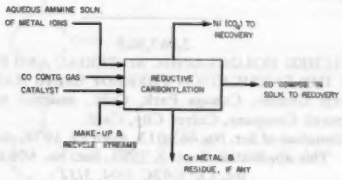


1. A process for recovering metal values from a source material containing sulfides of copper and nickel comprising:
   a. leaching said source material with an oxidative ammonia leach solution;
   b. recovering a pregnant leach liquor containing leached metal values and sulfate values;
   c. adding a calcium salt or base to precipitate a portion of said sulfate values as calcium sulfate;
   d. pressurizing said pregnant leach liquor to at least 5 psig with ammonia to precipitate complexes of copper and nickel;
   e. recovering said complexes from said leach liquor and partially decomposing said complexes; and
   f. recovering copper and nickel from the partially decomposed complexes.

3,967,958
METHOD OF WINNING COPPER, NICKEL, AND OTHER METALS

Thomas H. Coffield, Waterloo, Belgium, and Kestutis A. Keblys, Southfield, Mich., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 55,850, July 17, 1970, Pat. No. 3,755,099, which is a continuation-in-part of Ser. No. 717,034, March 28, 1968, and a continuation-in-part of Ser. No. 807,987, March 17, 1969. This application Aug. 27, 1973, Ser. No. 391,619
Int. Cl.² C22B *15/10, 23/04*
U.S. Cl. 75—103 **13 Claims**


AQUEOUS AMMINE SOLN. OF METAL IONS
Ni (CO)₄ TO RECOVERY
CO CONTG. GAS
CATALYST
REDUCTIVE CARBONYLATION
CO COMPDS. IN SOLN. TO RECOVERY
MAKE-UP & RECYCLE STREAMS
Cu METAL & RESIDUE, IF ANY

1. A process for recovering nickel values from manganese sea nodules, said process comprising:
   a. comminuting said nodules;
   b. subjecting the comminuted nodules to a reducing roast to convert the nickel values to nickel metal;
   c. cooling the reduced nodules under non-oxidizing conditions;
   d. oxidatively leaching said reduced nodules with an aqueous ammoniacal ammonium carbonate solution having a molar ratio of ammonia to metal of from 0:1 to 100:1 by injecting an oxygen-containing gas into a slurry of said reduced nodules in said aqueous ammoniacal ammonium carbonate solution;
   e. contacting the resultant leach solution containing nickel ammonium salt complexes with a carbon monoxide-containing gas at a temperature of from about 50° to about 250°C and a pressure of from about 50 to about 3000 psig whereby the nickel values are reduced to nickel carbonyl;
   f. separating said nickel carbonyl from said leach solution; and
   g. decomposing said nickel carbonyl to metallic nickel.

13. A process of claim 1 wherein said manganese sea nodules contain recoverable amounts of nickel, copper, and cobalt, said process comprising:
   a. comminuting said manganese nodules;
   b. subjecting the comminuted nodules to a reducing roast to convert the nickel, copper, and cobalt to nickel metal, copper metal, and cobalt metal;
   c. cooling the reduced nodules under non-oxidizing conditions;
   d. oxidatively leaching said reduced nodules with an aqueous ammoniacal ammonium carbonate solution having a molar ratio of ammonia to metal of from 0:1 to 100:1 by injecting an oxygen-containing gas into a slurry of said reduced nodules in said aqueous ammoniacal ammonium carbonate solution;
   e. contacting the resultant leach solution containing nickel, copper, and cobalt ammonium salt complexes with a carbon monoxide-containing gas at a temperature of from about 50° to about 250°C and a pressure of from about 50 to about 3000 psig whereby the nickel, copper, and cobalt values are reduced to nickel carbonyl, metallic copper, and cobalt tetracarbonyl anion;
   f. separating said nickel carbonyl from said leach solution;
   g. decomposing said nickel carbonyl to metallic nickel;
   h. recovering said metallic copper;
   i. separating said cobalt from said leach solution by injecting an oxygen-containing gas into said solution whereby said cobalt tetracarbonyl anion is oxidized to hydrated cobalt oxide; and
   j. heating said hydrated cobalt oxide at a temperature sufficient to drive off the waters of hydration to produce cobalt oxide.

3,967,959
MIGRATION IMAGING SYSTEM

William L. Goffe, Webster, and George A. Brown, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 97,866, Dec. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 172, Jan. 2, 1970, abandoned. This application Dec. 13, 1973, Ser. No. 424,504
Int. Cl.² G03G *13/00, 13/22*
U.S. Cl. 96—1 PS **16 Claims**

1. An imaging process comprising:
providing an imaging member comprising a substrate, a layer of substantially electrically insulating softenable material containing agglomerable migration marking material comprising a fracturable layer of said agglomerable migration marking material, said softenable layer capable of having its resistance to migration of agglomerable migration marking material decreased sufficiently to allow migration of agglomerable migration marking material in depth in said softenable layer, a layer of gelatin overlying said softenable layer and said fracturable layer of said agglomerable migration marking mate-

rial contacting said gelatin layer-softenable layer interface;

forming an electrical latent image on said imaging member; and

developing said imaging member by decreasing the resistance to migration of agglomerable migration marking material in depth in the softenable layer at least sufficient to allow imagewise migration of agglomerable migration marking material in depth in the softenable layer.

3,967,960

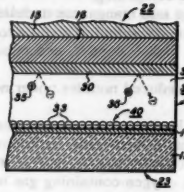
PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING DARK CHARGE INJECTING ELEMENT

P. Keith Watson, Rochester; Paul J. Cressman, Fairport, and Richard V. LaDonna, Irondequoit, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 21, 1974, Ser. No. 516,702

Int. Cl.² G03G 17/04

U.S. Cl. 96—1 PE **22 Claims**



1. A photoelectrophoretic imaging process comprising the steps of providing an imaging layer comprising a suspension of electrically photosensitive pigment particles in an electrically insulating liquid placed between an electrically conductive electrode and a first blocking electrode, said conductive electrode being at least partially transparent to electromagnetic radiation to which at least a portion of said pigment particles are sensitive and said first blocking electrode being coated with a dark charge injecting agent, said dark charge injecting agent on said first blocking electrode being capable of causing said pigment particles to be substantially uniformly attracted to said conductive electrode when an electrical field is applied across said suspension in the dark between said conductive electrode and said first blocking electrode, subjecting said suspension to a first electrical field established between said conductive electrode and said first blocking electrode in the dark while in contact with said dark charge injecting agent whereby said pigment particles are substantially uniformly deposited on said conductive electrode, subjecting said imaging layer to a second electrical field established between said conductive electrode and a second blocking electrode free of said dark charge injecting agent while exposing said suspension to electromagnetic radiation to which at least a portion of said pigment particles are sensitive until an image is formed.

3,967,961

PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING A DARK CHARGE INJECTING AGENT - ALKYD RESIN COATING

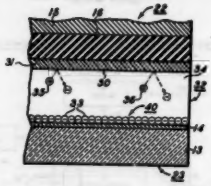
Luke C. Lin, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1974, Ser. No. 529,330

Int. Cl.² G03G 17/04

U.S. Cl. 96—1.2 **23 Claims**

1. A photoelectrophoretic imaging process comprising the steps of providing an imaging layer comprising a suspension of electrically photosensitive pigment particles in an electrically insulating carrier liquid placed between an electrically conductive electrode and a blocking electrode, said conductive electrode being at least partially transparent to electromagnetic radiation to which at least a portion of said pigment particles are sensitive and said blocking electrode being coated with a dark charge injecting agent, said agent being dispersed in a binder of an unpolymerized, electrically insulating, oil modified alkyd resin, wherein said dark charge injecting agent coating on said blocking electrode is capable of causing said pigment particles to be substantially uniformly attracted to said conductive electrode when an electrical field



is applied across said suspension in the dark, subjecting said suspension to an electrical field established between said conductive electrode and said blocking electrode in the dark while in contact with said dark charge injecting agent containing binder whereby said pigment particles are substantially uniformly attracted to said conductive electrode, and during said electrical field application exposing said suspension to electromagnetic radiation to which at least a portion of said pigment particles are sensitive until an image is formed.

3,967,962

DEVELOPING WITH TONER POLYMER HAVING CRYSTALLINE AND AMORPHOUS SEGMENTS

James J. O'Malley, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 418,628, Nov. 23, 1973, abandoned.

This application Oct. 22, 1975, Ser. No. 624,676

Int. Cl.² G03G 13/08, 9/02

U.S. Cl. 96—15 D **14 Claims**

1. In an electrophotographic imaging process including the steps wherein a particulate electrostatographic toner composition is applied in image configuration to the surface of a recording member, and said recording member bearing said toner composition in image configuration is subjected to heat or heat and pressure sufficient to fuse said toner composition to the surface of said recording member, the improvement which comprises conducting said imaging process using a finely divided toner composition comprising a uniform mixture of:

a. a colorant material and

b. a polymeric material, said polymeric material comprising a segmented copolymer consisting of at least one crystalline or crystallizable polymeric segment chemically linked to at least one isomeric amorphous polymeric segment, said segmented copolymer having a glass transition temperature of less than about 20°C and a melting point of at least about 45°C.

3,967,963

BLEACHED HOLOGRAPHIC MATERIAL AND PROCESS FOR THE FABRICATION THEREOF USING HALOGENS

Andrejs Graube, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 463,013, April 22, 1974, abandoned.

This application Sept. 2, 1975, Ser. No. 609,634

Int. Cl.³ G03C 5/04, 5/32

U.S. Cl. 96—27 H **7 Claims**

1. A process for the fabrication of a hologram having a resistance to printout greater than 500 seconds at a light power level of at least 3.4 watts per square centimeter and low film distortion consisting of the following steps;

A. Exposing a photographic plate comprising a silver halide emulsion on a transparent substrate to the interfering beams of a laser,
B. Developing and fixing said exposed plate in a conventional manner,
C. Drying said developed plate,
D. Exposing said plate to halogen vapor source until said plate is transparent, and
E. Aerating said plate until halogen discoloration, if any, is removed.

3,967,964

PHOTOSENSITIVE FILM COMPRISING AN ORGANOPOLYSELENIDE AND AN ORGANOMERCURY COMPOUND

Dana G. Marsh, Rochester, and Joseph Y. C. Chu, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1975, Ser. No. 601,007
Int. Cl.² G03C 5/24, 1/00
U.S. Cl. 96—48 R 13 Claims

1. An imaging method which comprises exposing in an imagewise manner to activating radiation a film comprising:
a. an organic polymer as matrix material having uniformly dispersed therein;
i. an organopolyselenide characterized by the formula:

$$R_1—(Se)_n—R_2$$

wherein n is 2 or 3; and
R_1 and R_2 are aralkyl or alkyl hydrocarbon moieties; and
ii. an organomercury compound characterized by the formula:

$$R_3—Hg—R_4$$

wherein R_3 and R_4 are aryl, aralkyl or alkyl hydrocarbon moieties thereby forming dark brown images with a metallic luster.

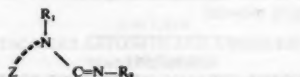
3,967,965

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING ANTI-FOGGING AGENT

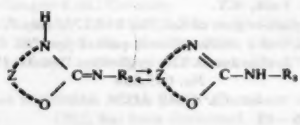
Keiichi Adachi; Akikazu Mikawa; Ikutaro Horie, and Hisashi Shiraishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 14, 1975, Ser. No. 540,764
Claims priority, application Japan, Jan. 14, 1974, 49-7271
Int. Cl.² G03C 1/48, 1/06, 1/34
U.S. Cl. 96—76 R 8 Claims

1. A photographic light-sensitive material comprising a support having thereon at least one silver halide photographic emulsion layer at least one of the layers of the photographic light-sensitive material containing in an amount sufficient to inhibit fog, a compound of the following general formulae (I) or (II):



(I)



(II)

wherein R_1, R_2 and R_3 each represents a hydrogen atom, an alkyl group, an aryl group or a six member heterocyclic ring containing up to two nitrogen atoms with the remaining atoms of the six member ring being carbon atoms, or R_1 and R_2 can combine to form a ring through a dimethylene group or a methylene carbonyl group in which the methylene moiety can be substitued with an alkyl group having 1 to 4 carbon atoms or a phenyl group, and Z represents an alkylene group having 2 to 4 carbon atoms or the organic acid salts or mineral acid salts of the compound of the general formula (I) or (II).

3,967,966

PHOTOGRAPHIC GELATINE LAYERS WITH IMPROVED PHYSICAL AND PHOTOGRAPHIC PROPERTIES

Wolfgang Himmelmann, Opladen; Gerhard Balle; Fritz Nittel, both of Cologne, and Wilhelm Saleck, Schildgen, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Apr. 17, 1973, Ser. No. 351,850
Claims priority, application Germany, Apr. 19, 1972, 2219004
Int. Cl.² G03C 1/72
U.S. Cl. 96—114 13 Claims

1. In a photographic material containing a gelatin layer in which the gelatin is plasticized, the improvement according to which it is plasticized with a substantially water-insoluble compolymer of
a. at least one C_1 to C_{18} alkyl ester of acrylic acid or C_4 to C_{18} alkyl ester of methacrylic acid, and
b. a disulfonimide or sulfonimido-phosphate or sulfonimido-phosphoric acid amide,
the copolymer being at least 70% (a) and at least 5% (b), and the copolymer being present in an amount from about 5% to about 100% of the gelatin by weight.

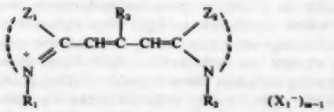
3,967,967

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Masanao Hinata; Haruo Takei; Akira Sato, and Atsuo Iwamoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

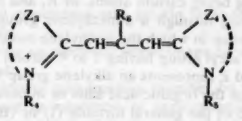
Filed Dec. 6, 1974, Ser. No. 530,102
Claims priority, application Japan, Dec. 6, 1973, 48-138344
Int. Cl.² G03C 1/14
U.S. Cl. 96—124 10 Claims

1. A silver halide photographic emulsion containing, in combination, supersensitizing amounts of (A) at least one sensitizing dye of the following general formula (I)



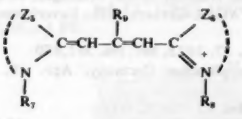
(I)

wherein Z_1 represents an atomic group required to form a benzimidazole ring; Z_2 represents an atomic group required to form a benzoselenazole ring; R_1 and R_2 each represents an aliphatic group, with at least one of R_1 and R_2 being a carboxy-containing alkyl group or a sulfo-containing alkyl group; R_3 is a hydrogen atom or an alkyl group; X_1 is an acid anion; and m is 1 or 2, and when m is 1 the dye forms an intramolecular salt; and (B) at least one sensitizing dye selected from the group consisting of a sensitizing dye of the following general formula (II)



(II)

wherein Z_3 represents an atomic group required to form a benzothiazole ring, a β-naphthothizole ring or a 62-naphthoselenazole ring; Z_4 represents an atomic group required to form a benzimidazole ring; R_4 and R_5 each represents an aliphatic group, with at least one of R_4 and R_5 being a carboxy-containing alkyl group or a sulfo-containing alkyl group; R_6 is a hydrogen atom or an alkyl group; X_2 is an acid anion; and n is 1 or 2, and when n is 1 the dye forms an intramolecular salt; and a sensitizing dye of the following general formula (III)



(III)

wherein Z_5 represents an atomic group required to form a benzothiazole ring or a benzoselenazole ring; Z_6 represents an atomic group required to form a benzoxazole ring; R_7 and R_8 each represents an aliphatic group, with at least one of R_7 and R_8 being a carboxy-containing alkyl group or a sulfo-containing alkyl group; R_9 is a hydrogen atom or an alkyl group; X_3 is an acid anion; and p is 1 or 2, and when p is 1 the dye forms an intramolecular salt.

3,967,968

BAND PLY DOPE COMPOSITIONS

Christopher Robin Stone, Fulham, and Brian Matthew Eugene McGarry, Kingston-on-Thames, both of England, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 365,650, May 31, 1973, abandoned, Continuation-in-part of Ser. No. 236,531, March 10, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 528,000

Int. Cl.² B28B *7/36, 7/38;* **C08L** *1/28;* **C09J** *3/04*

U.S. Cl. 106—38.28 **2 Claims**

1. A band ply dope in the form of a thixotropic composition, maintainable as a viscous sprayable material by moderate agitation which rapidly sets to a gel when agitation is terminated, such composition comprising an azeotropic mixture of isopropyl alcohol and water as the volatile liquid phase, such mixture having sufficient water to yield a boiling point below 90°C., a hydroxybutyl methyl cellulose thickening agent capable of imparting thixotropic properties to said liquid, a filler selected from the group consisting of finely divided mica and finely divided graphite, a high viscosity lubricant having a viscosity in excess of 2,000 centipoises at 20°C. and selected from the group consisting of a silicone oil and a silicone - polyglycol copolymer, said dope having 1.5 to 4 parts of said thickening agent, 10 to 40 parts of said finely divided filler, and 1 to 15 parts of said lubricant, all per 100 parts of said liquid phase, said dope composition being capable of drying to a strong, tough film containing said dispersed lubricant and filler.

3,967,969

HIGH ZIRCONIA CONTAINING GLASS CERAMIC CEMENT

Terence Stanley Busby, and Geoffrey Charles Cox, both of Sheffield, England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 253,669, May 1, 1972, Pat. No. 3,826,659. This application July 9, 1974, Ser. No. 486,754

Claims priority, application United Kingdom, May 5, 1971, 13278/71; Nov. 27, 1971, 55157/71

The portion of the term of this patent subsequent to July 30, 1991, has been disclaimed.

Int. Cl.² C03C *3/22, 3/04, 3/12*

U.S. Cl. 106—39.6 **3 Claims**

1. A glass ceramic cement comprising by weight 20% to 45% ZrO_2, 20% to 60% Al_2O_3, 0% to 27% SiO_2, 0% to 30% CaO, 0% to 10% Na_2O, the cement including at least one material selected from the group B_2O_3 and PbO, in the amounts up to 35% and 25% respectively, sufficient to assist in taking ZrO_2 into solution during the melting of said glass ceramic cement, B_2O_3 in the absence of PbO being in an amount more than 5%, PbO in the absence of B_2O_3 being in an amount more than 2%.

3,967,970

CELLUATION METHOD AND PRODUCT

John W. North, Decatur, Ga.

Continuation of Ser. No. 293,810, Oct. 2, 1972, abandoned. This application Dec. 27, 1974, Ser. No. 536,846

Int. Cl.² C04B *35/00*

U.S. Cl. 106—41 **7 Claims**

1. A method of preparing a bloated cellular product comprising:

a. admixing naturally occuring clayey material particles and an aqueous solution having dissolved therein a non-oxidizing flux for said material and a bloating agent containing reactable carbon under such conditions that the solution is uniformly dispersed and absorbed into the clayey material particles;

b. heating said admixture under temperature and time conditions sufficient to drive the liquid from said solution so as to cause the dissolved flux and bloating agent to migrate with the water to the surface of the particles and be deposited thereon as the water is driven off of the particles;

c. continuing the heating of said admixture under temperature conditions sufficiently high that said flux and said bloating agent become molten and flow into the particles; and

d. still further continuing the heating of said admixture under elevated temperature conditions above 2100°F and sufficiently high and for a sufficient length of time that the oxygen contained in said naturally occurring clayey material reacts with said carbon to produce an oxide of carbon in gaseous form and said clayey material particles become viscous, said bloating agent being so evenly dispersed in said viscous clayey material that the gases are trapped in said material, forming a cellular structure in said clayey material.

3,967,971

TRANSLUCENT CERAMIC WHITEWARE PRODUCTS

Richard A. Eppler, Timonium, Md., assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 161,273, July 9, 1971, abandoned, and a continuation-in-part of Ser. No. 425,554, Dec. 17, 1973, abandoned. This application Dec. 31, 1975, Ser. No. 645,539

Int. Cl.² C04B *33/24, 33/00*

U.S. Cl. 106—45 **3 Claims**

1. A vitrified, translucent, low-expansion ceramic body suitable for glazing with a glaze, the ceramic body, consisting essentially of:

a semicrystalline, non-porous, whiteware ceramic body having an oxide analysis consisting essentially of 51.5 to 58 parts by weight SiO_2, 28 to 36 parts by weight Al_2O_3, 10 to 17 parts by weight MgO, and 4 to 10 parts by weight of oxides selected from Na_2O, K_2O, CaO, BaO, SrO, PbO, and ZnO, wherein the parts by weight are based on $SiO_2 + Al_2O_3 + MgO = 100$ weight parts;

said ceramic body having a coefficient of expansion less than 50×10^{-7} cm./cm./°C;

said ceramic body having a crystalline phase consisting of cordierite;

said ceramic body having an $Fe_2O_3 + TiO_2$ content of less than 1% by weight;

said ceramic body being substantially free of lithia (Li_2O); and

said ceramic body having a light transmission of at least about 0.9% per 0.1 inch thickness.

3,967,972
SOLUBLE SILICATE DISKS

Frank J. Lazet, Media, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Filed May 12, 1975, Ser. No. 576,515
Int. Cl.² C09J *1/02*
U.S. Cl. 106—74 **8 Claims**

8. A substantially dust free alkali metal silicate particle prepared by crushing a fracture and stress free, circular disk of alkali metal silicate which has a diameter of ¾ to 2½ inches (1.9 to 6.35 cm) and a thickness up to 7/16 of an inch (1.12 cm).

3,967,973
VEHICLE AND SEALING GLASS PASTE AND METHOD FOR MAKING SAME

Josef Francel; James E. King, both of Toledo, and John M. Woulbroun, Grand Rapids, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 246,316, April 21, 1972, abandoned. This application Oct. 2, 1974, Ser. No. 511,202
Int. Cl.² C08K *5/11*; C08L *1/20, 1/18*; C09J *3/04*
U.S. Cl. 106—183 **6 Claims**

1. A vehicle for a glass frit, said vehicle comprising a solution of:

A. nitrocellulose

B. a solvent selected from the group consisting of amyl acetate, methyl amyl acetate, ethyl hexyl acetate, n-butyl acetate, isobutyl acetate, sec. butyl acetate and diethylene glycol monobutyl ether acetates;

C. hydroxypropyl cellulose having a molecular weight of about 40,000 to about 300,000; and

D. a solvent selected from the group consisting of ethylene glycol methyl ether and ethylene glycol ethyl ether; wherein said hydroxypropyl cellulose is present in an amount sufficient to impart stability to a paste comprising said vehicle and frit.

3,967,974
SYNTHETIC WOLLASTONITE AND A PROCESS FOR ITS MANUFACTURE

Walter Ohnemuller, Leverkusen, and Alexander Solf, Bensberg-Refrath, both of Germany, assignors to Reimbold & Strick, Cologne-Kalk, Germany

Continuation of Ser. No. 18,342, March 10, 1970, Pat. No. 3,861,935. This application Jan. 21, 1975, Ser. No. 542,796
Claims priority, application Germany, Mar. 12, 1969, 1912354
The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.
Int. Cl.² C01B *33/24*; C09C *1/28*
U.S. Cl. 106—306 **4 Claims**

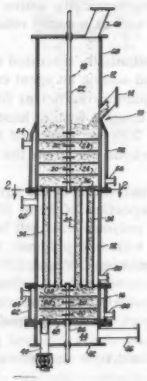
3. The pure, synthetic, crystalline beta-wollastonite having a BET specific surface area of 3 to 100 sq.m./g. and a crystal particle size of 0.01 to 2 um, which is the product made in accordance with the process which comprises subjecting an aqueous suspension of calcium oxide hydrate and a source of SiO_2 in a molar ratio of SiO_2:CaO of about 0.7 to about 1.3 to hydrothermal treatment in the range of about 100°C. to about 500°C. to produce calcium silicate hydrates having a SiO_2/-CaO molar ratio of about 0.7 to about 1.3 and annealing the calcium silicate hydrates at about 800°C. to about 1150°C. to dehydrate the same to the substantially pure, crystalline beta-wollastonite, the solid contents of the aqueous suspension of calcium oxide hydrate and source of SiO_2 being about 30% to 80% by weight.

4. The pure synthetic crystalline beta-wollastonite of claim 3, wherein in the process there is added soluble alkali or alkaline earth metal salts to the initial aqueous suspension in an amount of about 2% to 10% by weight of the solids content.

3,967,975
FLUIDIZATION APPARATUS

Leo R. Idaszak, Palos Heights, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 25, 1974, Ser. No. 526,784
Int. Cl.² C13K *1/06*; C13L *1/10*; F26B *17/10*
U.S. Cl. 127—23 **11 Claims**



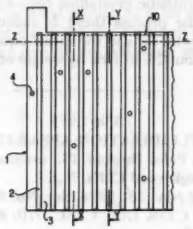
1. Apparatus for carrying out fluidized operations comprising an elongate generally upstanding housing, said housing defining an upper chamber, an intermediate chamber and a lower chamber, said upper and lower chambers each including agitating means therein, said agitating means including rotatable agitator blades mounted in each of said upper and lower chambers, a plurality of open ended tubes positioned in said intermediate chamber, the open ends of each of said tubes communicating the interior of said tubes with the upper and lower chambers, respectively, inlet means to supply a fluidizable material to either of said upper or lower chamber, said intermediate chamber comprising jacket means surrounding the tubes to effect heat exchange therewith, outlet means to remove fluidizable material from the other of said upper or lower chamber and means to supply a fluidizing gas to the lower chamber whereby the fluidizing gas passes upwardly through the lower chamber, through each of the tubes and into the upper chamber while fluidizing the material therein, and outlet means in said upper chamber for removing said fluidizing gas.

3,967,976

METHOD FOR PREPARING ELECTRODES FOR AN ELECTROCHEMICAL STORAGE CELL

Robert Gadessaud, Massy, and Claudette Audry, Issy-les-Moulineaux, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 24, 1975, Ser. No. 561,501
Claims priority, application France, Mar. 28, 1974, 74.10902; Mar. 28, 1974, 74.10903
Int. Cl.² H01M 35/18
U.S. Cl. 136—75 30 Claims



1. A method for preparing an electrode for an electrochemical storage cell, the electrode comprising a collector part of an electronically conductive and chemically inert material coated on an electrochemically active part comprising an oxide of a metal, as well as a partly reticulated polymer, the method comprising:

A. preparing a substantially saturated solution of said polymer in water, and adding an agent capable of forming an aldehyde in a quantity sufficient for partly reticulating said polymer in contact with at least a catalyst, in a proportion of 5 to 20% by weight of the agent capable of forming the aldehyde based on the weight of said polymer;

B. adding a salt of said metal to the aqueous solution of said polymer in a proportion of 20 to 50 parts by weight for one part of said polymer, said salt being soluble in water and compatible with said polymer; the addition being at a temperature between 50° and 100°C;

C. filling a mould in which said collector part of the electrode has previously been placed with said solution, until said collector part of the electrode is completely immersed;

D. cooling the mould to a temperature of no lower than −20°C;

E. removing the cake formed in D) from said mould and immersing said cake in an alkaline solution saturated with an oxide of said metal;

F. washing said cake in cold water;

G. drying said cake at a temperature between 20° and 60°C; and

H. compressing said cake at a pressure between 2 and 10 bars/sq.cm., whereby

longitudinal strips of a material having, with respect to said electrochemically active part of said electrode, non-adhesive properties are deposited on each of the faces of said collector part, so that a space thus remains between said electrochemically active part and each of the longitudinal strips.

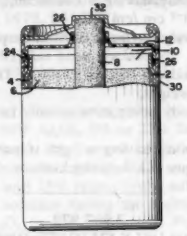
3,967,977

CLOSURE FOR GALVANIC DRY CELLS

Richard B. Affeldt, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1975, Ser. No. 563,133
Int. Cl.² H01M 2/04
U.S. Cl. 136—133 10 Claims

1. A galvanic cell comprising in combination a cylindrical container having an open end, an electrode comprising a depolarizer mix disposed within said container and separated therefrom by a separator, a current collector centrally embedded in said depolarizer mix and a closure covering the open end of said container, said closure having a tubular neck at its center and a tubular skirt at its periphery and being disposed such that the upper portion of the current collector passes



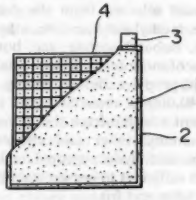
through and is adhesively secured to the internal wall defining said tubular neck and the peripheral tubular skirt of the closure is disposed outside and is adhesively secured to the upper rim at the open end of said container thereby providing a closure seal for said cell and wherein the thickness of said closure is between about 0.005 inch and about 0.06 inch.

3,967,978

RESIN SHEET HAVING POROUS LAYERED STRUCTURE USEFUL AS ELECTRODE SEPARATOR FOR ELECTRIC CELLS

Seiichirou Honda, Kawanishi; Hiroyoshi Hata, Mishima; Yosimasa Simura, Mishima, and Soichi Une, Mishima, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1974, Ser. No. 455,726
Claims priority, application Japan, Mar. 30, 1973, 48-36930; Mar. 30, 1973, 48-36931; Apr. 5, 1973, 48-39229; Apr. 5, 1973, 48-39230
Int. Cl.² H01M 2/14; 136/146
U.S. Cl. 136—146 16 Claims



1. A resin sheet having a porous layered structure useful as an electrode separator for electric cells, said sheet comprising 100 parts by weight of an olefin resin having integrally and uniformly incorporated therein (A) 5 to 300 parts by weight, per 100 parts by weight of the olefin resin of a finely divided inorganic substance and (B) at least one substance selected from the group consisting of (1) 3 to 100 parts by weight per 100 parts of the olefin resin of a water-swellable thermoplastic resin, (2) 0.01 to 30 parts by weight per 100 parts by weight of the olefin resin of a water-insolubie or difficultly water-soluble hydrophilic nonionic surface active agent and (3) 0.01 to 30 parts by weight per 100 parts by weight of the olefin resin of a water-insoluble or difficulty water-soluble hydrophilic anionic surface active agent, said sheet including fine pores arranged throughout its cross section in a plurality of layers, the diameter of said pores being 0.005 to 20 microns and 40

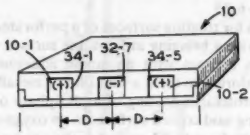
to 90% of the pores being open cells of which the maximum pore diameter is 0.01 to 10 microns.

3,967,979

BATTERY AND CASE FOR APPLICATION IN RANDOM MODE TO SUPPLY PROPER POLARITY TO APPARATUS TO BE ENERGIZED

Gordon E. Kaye, Garrison, N.Y., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Dec. 4, 1974, Ser. No. 529,310
Int. Cl.² H01M *1/02*
U.S. Cl. 136—173 11 Claims



1. A battery cartridge comprising a case with an interior bounded in part by a wall having a succession of apertures therethrough, a first aperture in said succession being situated equidistant from second plural apertures in said succession, cell means disposed in said case interior and having first and second polar surfaces for providing a voltage difference therebetween, terminal means for said cartridge comprising a first terminal juxtaposed with said first aperture and second terminals juxtaposed individually with said second apertures, first electrically conductive means in said case interior for connecting said first terminal to said cell means first polar surface and second electrically conductive means in said case interior for connecting said second terminals in common to said cell means second polar surface.

3,967,980

METHOD FOR FORMING A DRY CHARGE-TYPE BATTERY ITSELF

Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., Rolling Meadows, Ill.

Filed July 8, 1974, Ser. No. 486,659
Int. Cl.² H01M *10/04*
U.S. Cl. 136—176 3 Claims

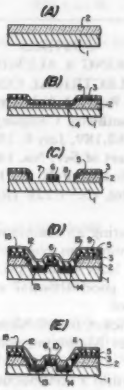
1. A method of manufacturing a lead-acid storage battery including a container having a plurality of cell compartments and a plurality of battery elements consisting of a plurality of positive and negative plates with separators positioned therebetween, the battery elements being electrically connected, to provide a battery capable of being stored and thereafter activated by the addition of activation electrolyte, and, if required, charging, which comprises forming the plates by bringing said plates into contact with a formation electrolyte and applying current thereto at levels and for time to reach the desired end-of-charge voltage, treating the battery elements such that sufficient acid will be retained in the elements to provide, upon activation, including the addition of activation electrolyte having a specific gravity of about 1.265, a battery operating electrolyte having a specific gravity in the range of from about 1.260 to 1.290, the formation electrolyte being drained from the battery and said treating being carried out by adding a development electrolyte and allowing the development electrolyte to diffuse into and saturate the battery elements and mix with the residual formation electrolyte therein, draining the battery leaving the battery elements substantially saturated, reducing the level of residual acid retained in the battery plates sufficiently below saturation so that, on standing, the retained acid will not migrate to the outer surfaces of the battery elements so as to form liquid bridges between the plates and separators that result in crystal growth and clusters of crystals creating internal shorts, and sealing the battery.

3,967,981

METHOD FOR MANUFACTURING A SEMICONDUCTOR FIELD EFFORT TRANSISTOR

Shumpei Yamazaki, 20-7, 1-chome, Shinkawa, Shizuoka, Japan

Continuation of Ser. No. 575,032, May 5, 1975, abandoned, which is a continuation of Ser. No. 407,878, Oct. 19, 1973, abandoned, Division of Ser. No. 213,998, Dec. 30, 1971, abandoned. This application June 25, 1975, Ser. No. 590,082
Claims priority, application Japan, Jan. 14, 1971, 46-000799; Jan. 14, 1971, 46-000798
Int. Cl.² H01L *7/34*
U.S. Cl. 148—1.5 7 Claims



1. A method for making a semiconductor structure having at least two diffused regions of one conductive type in a semiconductor substrate, which comprises: forming an insulating layer on said substrate, etching away a portion of said insulating layer, diffusing impurities into said exposed portions of said semiconductor substrate to form said diffused regions, forming a selectively oxidized conductor layer on said diffused regions and said insulating layer by forming a mask selectively on such conductor layer, and fully oxidizing the unmasked portion by anodic oxidation and simultaneously making conductive leads of said masked portion of said conductor layer on said insulating layer and electrodes of said unmasked portion of said conductor layer contacting with said diffused regions.

3,967,982

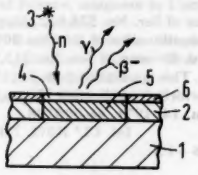
METHOD OF DOPING A SEMICONDUCTOR LAYER

Heinz-Herbert Arndt, Taufkirchen; Joachim Burtscher, Munich; Gustav Fischer, Nurnberg; Ernst Haas, Erlangen; Joachim Martin, Erlangen; Gunter Raab, Erlangen, and Manfred Schnoeller, Haimhausen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 11, 1975, Ser. No. 595,150
Claims priority, application Germany, July 15, 1974, 2433991
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 16 Claims

1. A method of doping a semiconductor layer arranged on a substrate with a dopant substance comprising:

subjecting said semiconductor layer to controlled bombardment by neutrons so that atoms of said semiconductor



layer are converted by a nuclear reaction into dopant substance atoms.

3,967,983

METHOD FOR MAKING A ALUMINUM NICKEL BASE ALLOY ELECTRICAL CONDUCTOR

Enrique C. Chia, and Roger J. Schoerner, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 160,189, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 147,196, May 26, 1971, abandoned. This application Feb. 21, 1974, Ser. No. 444,497

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **4 Claims**

3. Method of preparing an aluminum base alloy electrical conductor having a minimum conductivity of 57% IACS, a tensile strength of at least 12,000 psi, a yield strength of at least 8,000 psi, and good thermal stability characteristics comprising the steps of:

a. alloying 0.60% Nickel, 0.30% Niobium, 0.18% Tantalum, and the remainder Aluminum with associated trace elements;

b. casting the alloy into a continuous bar in a moving mold formed by a groove in the periphery of a casting wheel and a belt lying adjacent the groove along a portion of the periphery of the wheel;

c. hot-working the cast bar substantially immediately after casting while the bar is in substantially that condition as cast to form a continuous rod;

d. drawing the continuous rod through a series of wire-drawing dies with no preliminary or intermediate anneals to form wire having nickel aluminate inclusions dispersed therein the majority of which are less than 2 microns in length and less than ½ micron in width; and

e. annealing or partially annealing the wire.

3,967,984

METHOD FOR TREATING COATED FERROUS SUBSTRATES

Lawrence E. Helwig, Hampton Township, Allegheny County, and Richard A. Neish, Snowden Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 3, 1975, Ser. No. 546,657

Int. Cl.² C23F *7/26*

U.S. Cl. 148—6.16 **9 Claims**

5. In the method for the treatment of ferrous metal substrates coated with thin layers of a metal selected from a group consisting of Zn, Al and Pb base alloys;

the improvement which comprises, applying to said coated substrate a solution consisting essentially of,

(a) 2.0 to 12.0 gms/l of hexavalent chromium, and

(b) 0.7 to 4.0 gms/l of a bifluoride selected from the group of $NaHF_2$, NH_4HF_2 and mixtures thereof,

(c) less than 0.5 gms/l of phosphate,

said solution adjusted to a pH within the range 2.7 to 5.5;

metering the amount of solution remaining on the surface of said substrate to provide a final coating thickness of 0.8 to 2.0 mg. of Cr per square foot of substrate surface and thereafter;

drying the thus coated substrate to remove substantially all of the physically bound water in said film.

3,967,985

PROCESS FOR TREATING SURFACES OF A PERFORATED MASK

Akiya Izumi; Shigemi Hirasawa, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 12, 1973, Ser. No. 405,841

Claims priority, application Japan, Oct. 18, 1972, 47-103583

Int. Cl.² C23F *7/10, 7/04*

U.S. Cl. 148—6.35 **13 Claims**

1. A process for treating surfaces of a perforated mask made of iron, comprising bringing at least one surface of the perforated mask in contact with an acidic aqueous solution of antimony trichloride to form a thin film of metallic antimony, depositing a protective coating of a phosphate onto said thin film and heating said coated surfaces in an oxygen atmosphere at 350° to 600°C for 1 to 5 hours, thereby producing a grayish black coating having an excellent thermal emission power on said surfaces of the perforated mask for use in a color picture tube.

3,967,986

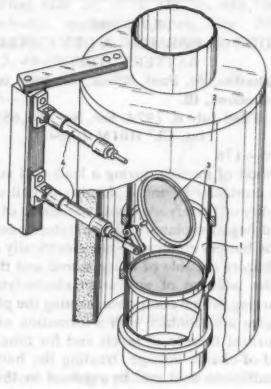
METHOD OF PREPARING FERROMAGNETIC MATERIAL

Hans Rau, Aachen-Laurensberg, and Karl-Georg Knauff, Aachen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 536,162

Int. Cl.² H01F *1/02*

U.S. Cl. 148—105 **5 Claims**



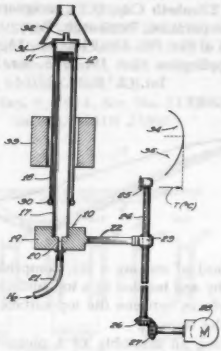
1. A method of preparing ferromagnetic material in the form of acicular particles consisting at least predominantly of iron, comprising the steps of reducing an iron oxide or iron oxide hydrate powder by intimately contacting the powder with a quantity of a gaseous reduction agent which predominantly contains hydrogen flowing at a rate corresponding at least to the formula $V = 0.4 \times T - 120$, where V is the volume in liters of the quantity of gaseous reduction agent at 0°C and 1 atm. which flows per hour and per gram of Fe contents of the material to be reduced, and T is the reduction temperature in °C, T being between 300° and 600°C.

3,967,987

EPITAZY OF HETEROJUNCTION DEVICES

Addison Brooke Jones, LaMirada, and Herbert F. Matare, Los Angeles, both of Calif., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 15, 1972, Ser. No. 234,770
Int. Cl.² H01L 7/38
U.S. Cl. 148—171 9 Claims



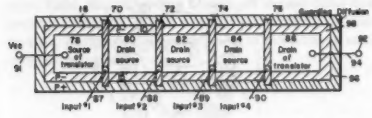
1. A method of producing an epitaxial layer on a crystalline semiconductor substrate comprising precoating the semiconductor substrate with a portion of a master melt, depositing a selected quantity of the master melt, heating the deposited master melt and the semiconductor substrate to melt a portion of the substrate and controlling the cooling of the substrate and the master melt so that a high-quality epitaxial layer is grown on the substrate.

3,967,988

DIFFUSION GUARDED METAL-OXIDE-SILICON FIELD EFFECT TRANSISTORS

Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 494,437, Aug. 5, 1974, Pat. No. 3,898,984, which is a division of Ser. No. 95,521, Dec. 7, 1970, Pat. No. 3,868,721, which is a continuation-in-part of Ser. No. 86,544, Nov. 2, 1970, abandoned. This application Mar. 14, 1975, Ser. No. 558,592
Int. Cl.² H01L 21/22
U.S. Cl. 148—187 4 Claims



1. A method for fabricating a field effect transistor having at least one guard region in a semiconductor substrate of one conductivity type, which comprises:

forming spaced apart source and drain regions of opposite conductivity type to said substrate in said substrate,

forming an insulating layer over the space between said source and drain regions,

forming a conductive gate electrode having two ends over said insulating layer, and

subsequently forming said at least one guard region so that the ends of said gate electrode are in registration with a corresponding portion of said at least one guard region.

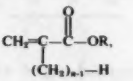
3,967,989

HIGH ENERGY PROPELLANT COMPOSITIONS INCLUDING VINYL DECABORANE-POLYESTER COPOLYMER BINDER

Marion F. Hawthorne, Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 783,614, Dec. 29, 1958, abandoned. This application Nov. 3, 1959, Ser. No. 851,935
Int. Cl.² C06D 5/06
U.S. Cl. 149—19.2 10 Claims

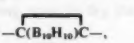
1. Polymerizable combustible compositions, suitable for the manufacture of propellants, consisting essentially of a mixture of (1) 10 to 50 parts of a monomer of the formula:



in which *n* is 1 to 2 and R is a radical selected from the group consisting of

$(HDCH_2)_2CH-$,
$(HD)_2CH-$,
$HDCH_2-$,
$HD(CH_2)_2-$,
$HD(CH_2)_3$,
$HD(CH_2)_4$,
$HD(CH_2)_5-$, and
$(CH_2D)_2CH-$

in which formulas —D— represents



(2) 0.1 to 3 parts of a polymerizable soluble multiply ethylenically unsaturated polyester selected from the group consisting of (1) 25 to 80 parts by weight of addition polymers of acids selected from the group consisting of maleic, fumaric, adipic, azelaic, sebacic, succinic and phthalic acids and mixtures thereof with glycols selected from the group consisting of ethylene, propylene, butylene, diethylene and triethylene glycols and mixtures thereof dissolved in (2) 20 to 75 parts by weight of a polyvinylidene composition selected from the group consisting of diallyl phthalate, diallyl maleate, diallyl succinate and divinylbenzene, (3) 5 to 25 parts of a nitrato ester of an alcohol containing not more than 10 carbon atoms, said alcohol having not more than three hydroxyl groups, (4) 50 to 80 parts of an oxidizer selected from the group consisting of solid inorganic oxidizing salts, nitroguanidine, pentaerythritol tetranitrate and cyclotrimethylenetrinitramine and mixtures thereof, (5) 0 to 25 parts of a finely particled readily combustible solid selected from the group consisting of carbon, lithium, aluminum, magnesium, zinc, zirconium and boron.

3,967,990

COMBINATION OF BAND-TYPE AND LINE-TYPE EMISSION PHOSPHORS WITH EXPLOSIVE

Frederick M. Ryan, New Alexandria, Pa., and Frank M. Vodoklys, Wayne, N.J., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

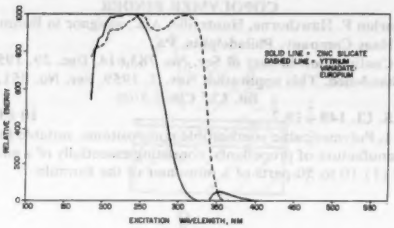
Filed Mar. 3, 1975, Ser. No. 554,839
Int. Cl.² C06B 45/00
U.S. Cl. 149—109.4 7 Claims

1. A fluorescent tagging phosphor composition comprising:

a spotting phosphor having zero excitation at a UV wavelength of 325 nm, said phosphor consisting of zinc silicate or calcium silicate activated with manganese; and

about 1% by weight of the spotting phosphor of a coding phosphor which fluoresces strongly at a UV wavelength

of 325 nm, said coding phosphor consisting of yttrium vanadate activated with a trivalent rare earth ion.



7. An explosive material tagged with the composition of claim 1.

3,967,991

METHOD FOR PRODUCING RECEPTACLES FROM THERMOPLASTIC RESIN FOAM SHEET

Ikuya Shimano, Osaka, and Takashi Matsui, Nara, both of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed Dec. 7, 1973, Ser. No. 422,958

Claims priority, application Japan, Dec. 8, 1972, 47-123595; Oct. 5, 1973, 48-112665

Int. Cl.[2] B29C *27/14, 27/20*

U.S. Cl. 156—85 **14 Claims**

1. A method for producing receptacles of a thermoplastic resin foam, which comprises the steps of:

forming a cylinder of a rectangular-shaped unidirectionally shrinkable thermoplastic resin foam which, when heated, shrinks in a first direction to a greater extent than other directions perpendicular to said first direction, so that when heated, said thermoplastic resin foam sheet will shrink toward the central axis of said cylinder;

bonding the side edges of said sheet forming said cylinder;

heating said foam sheet on a male mold member of a mold comprising a male mold member and a female mole member, having a hollow part provided at the upper part of a mold cavity formed by said male mold member and said female mold member, and which can be heated and cooled to a temperature above the softening point of said resin, whereby said cylindrical foam sheet shrinks toward the central axis of said cylinder formed by said sheet and intimately contacts the circumferential side wall of said male mold member to form a bottomless cylindrical article, said male mold member being of a size such that a portion of said foam sheet extends beyond one end surface of said male mold member;

further bending the circumferential edge of said cylinder formed by said sheet which extends beyond said end surface of said male mold member to circumferentially cover the edge of said male mold member;

inserting the resulting cylindrical article on said male mold member into said female mold member together with a bottom plate for said bottomless cylindrical article so that the bottom portion of said cylindrical article is adjacent said bottom plate;

compression-molding said article under heat thereby bonding said bottom plate to the bottom of said cylindrical article; and

pressing the upper edge of said cylindrical article which is positioned at said hollow part under heat to form a rib which reduces a volume.

3,967,992

PLASTIC SKI SURFACING SYSTEM

Harold O. McCaskey, Jr., Allendale, S.C., and Salvatore E. Palazzolo, Elizabeth City, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 326,910, Jan. 26, 1973, abandoned. This application Mar. 19, 1975, Ser. No. 559,939

Int. Cl.[2] B29C *27/14*

U.S. Cl. 156—85 **12 Claims**

1. A method of making a ski, comprising a flexible core surrounded by and bonded to a top surface, base surface and side wall surfaces between the top surface and base surface, comprising the steps of:

A. preparing an assembly of a plurality of polyacrylate sheets, each sheet having a weight average molecular weight of between about 260,000 and about 654,000,

B. superimposing the assembly of polyacrylate sheets on a flexible core having a bonded base surface and side wall surfaces,

C. consolidating the assembly of polyacrylate sheets and ski core at between about 100–600 psi and 120°–165°C to provide a ski having a polyacrylate stress relieved top surface which is shrunk between about 2–15% during consolidation of the polyacrylate sheets.

3,967,993

PROTECTED CONTAINER AND A PROCESS FOR PREPARING SAME

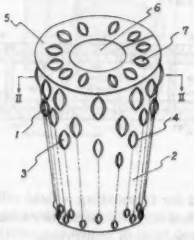
Yoshio Isomi, Nara, Japan, assignor to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed Mar. 21, 1974, Ser. No. 453,649

Claims priority, application Japan, Mar. 23, 1973, 48-36054[U]

Int. Cl.[2] B29C *27/00;* **B32B** *31/00*

U.S. Cl. 156—86 **3 Claims**



1. A progress for placing a protective coating of a foamed, heat shrinkable, styrenic resin sheet around at least a portion of a container, said process comprising:

a. stretching said sheet in a first direction;

b. forming a plurality of slits in said sheet said slits being positioned at less than ± 70° to the perpendicular to said first direction;

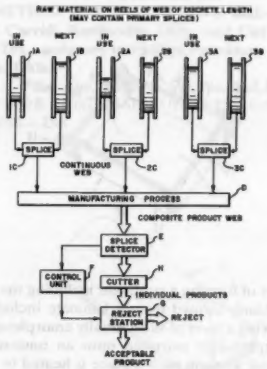
c. surrounding at least a portion of said container with said sheet;
d. heating said sheet to a temperature between the softening and melting temperature of said resin whereby said sheet shrinks to closely contact said portion of said container; and,
e. further heating said sheet until the side of said slits warp outward and harden to form a hole with a raised hardened portion at each side.

3,967,994

METHOD OF INSPECTION FOR SPLICES USED FOR JOINING WEBS IN A MANUFACTURING PROCESS

Edwin Langberg, Mount Laurel, N.J., assignor to Langberg Associates, Inc., Mount Laurel, N.J.

Filed Oct. 9, 1974, Ser. No. 513,302
Int. Cl.² G01N *23/00*
U.S. Cl. 156—64 **5 Claims**



1. A method for maintaining the continuity of a manufacturing process employing one or more webs, each of which is provided in the form of shorter webs of raw material to be fed sequentially into the process as the preceeding web of the same material is depleted, comprising:
a. splicing successive shorter webs of the same raw material together as each is depleted through use in the process with an adhesive tape having thereon an electrically conductive coating; and
b. monitoring the web at the output of such process by irradiating it with a microwave frequency electromagnetic field, and detecting variations in said field due to the presence therein of the conductive coating on said tape, thereby permitting identification of portions of such webs containing splices.

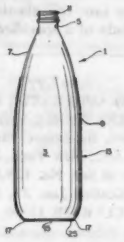
3,967,995

JACKETED BOTTLE AND METHODS OF MAKING SAME

William L. Fabianic, Alton, Ill., assignor to Liberty Glass Company, Sapulpa, Okla.

Continuation-in-part of Ser. No. 255,992, May 23, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,785
Int. Cl.² B29C *27/20*
U.S. Cl. 156—86 **4 Claims**

1. The method of protecting glass bottles from bottle-weakening abrasion and scratches, each bottle having a body and a neck and a generally conical transition from the upper end of the body to the neck, with a shoulder at the junction of said body and said transition, said method comprising feeding forward bottles standing upright one after another in a predetermined generally horizontal path, placing a jacket on each bottle as it travels forward along said path, the jacket being a pre-formed paper jacket having an upper generally conical portion slightly larger than said generally conical transition of the bottle and a lower generally cylindrical body portion slightly larger than the body of the bottle, said conical portion of the jacket being open at its upper end and said cylindrical portion of the jacket being open at its lower end, the jacket being telescopically applied lower end first to the bottle over the upper end of the bottle and moving downwardly on the



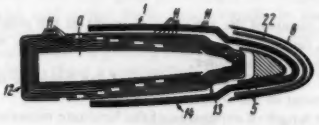
bottle to position the jacket with the conical portion of the jacket surrounding and contiguous to the exterior surface of the conical transition of the bottle and the cylindrical portion of the jacket surrounding and contiguous to the exterior surface of the body of the bottle, passing each bottle with a jacket thereon through a humidifying zone to humidify the entire jacket, and then passing each bottle with the humidified jacket thereon through a drying zone to dry the jacket and cause it to shrink on the bottle.

3,967,996

METHOD OF MANUFACTURE OF HOLLOW PIECES

Nikolai Ilich Kamov, ulitsa Gorkogo, 43, kv. 96; Nikolai Nikolaevich Priorov, ulitsa Novoslobodskaya, 57/60, kv. 9, both of Moscow; Anatoly Fedorovich Kovalev, ulitsa L.Tolstogo, 7, kv. 150, Moskovskaya oblast, Ljubertsy; Mark Alexandrovich Kupfer, ulitsa Festivalnaya, 19, kv. 9, Moscow; Alexandr Georgievich Satarov, ulitsa Sovkhoznaya, 24, korpus 2, kv. 8, Moskovskaya oblasti, Ljubertsy; Iosif Shulimovich Sherman, 9 Parkovaya, 49, korpus 1, kv. 32; Anatoly Filippovich Vakulenko, Leninsky prospekt, 66, kv. 264, both of Moscow; Igor Ivanovich Kovyryalkin, kvartal 2a, 20, kv. 49, Moscow, Lenino-Dachnoe; Stanislav Ivanovich Stetsenko, ulitsa L.Tolstogo, 11, kv. 40, Moskovskaya oblast, Ljubertsy; Vladimir Borisovich Golstman, ulitsa 8 Marta, 42, kv. 8, Moskovskaya oblast, Ljubertsy, and Konstantin Nikolaevich Guskov, ulitsa 8 Marta, 40, kv. 18, Moskovskaya oblast, Ljubertsy, all of U.S.S.R.

Continuation of Ser. No. 360,025, May 14, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 512,307
Int. Cl.² B29C *17/00, 27/00;* **B64C** *27/04*
U.S. Cl. 156—156 **12 Claims**



1. A method of manufacturing hollow blades and hollow blade spars of aircraft rotors having a variable cross-sectional shape, comprising the steps of: making a composite blank by first assembling each component part thereof from separate flexible flat sheets cut from an adhesive-covered cloth of material which sheets are placed one onto another on a rigid mandrel having an outer surface corresponding with the inner

surface of the blade; subjecting each of the component parts assembled of separate sheets and lying on the rigid mandrel to a preliminary compression which consists of applying pressure and heat to the sheets to cause agglutination of the sheets and forming a component part of a blank having an unclosed profile and a rigidity sufficient for subsequent steps; assembling the component parts so as to form a cavity of a closed profile; placing an elastic bag into the cavity; placing the blank assembled of its component parts and with the elastic bag in its cavity into a mold whose inner surface corresponds with the outer surface of the blade; and performing final pressing by supplying pressure into the elastic bag and heating the blank whereby the blade of a specified shape is produced.

3,967,997

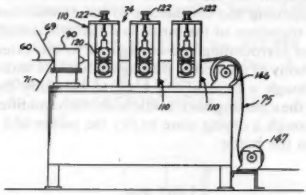
METHODS OF AND APPARATUS FOR PRODUCING A STRESS-FREE LAMINATE

Charles Henry Masters, Baltimore, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 129,890, March 31, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,236

Int. Cl.[2] B32B *31/06, 31/14*

U.S. Cl. 156—201 **10 Claims**



1. A method of forming a laminate from materials having different coefficients of thermal expansion which are bonded with a temperature sensitive adhesive, which comprises the steps of:

advancing the laminate along a path;

providing in the path a roller which is a segment of a sphere wherein the radius of curvature of the spherical segment of the roller is determined by the expression:

1. $r_o = r_2 - r_2[(\Delta l_r t_r) - (\Delta l_s t_r)] - T_a/2$

imparting a predetermined three-dimensional curvature having finite values greater than zero in each of the materials of the laminate while the adhesive is flowable and the materials are at some predetermined elevated temperature above ambient temperature by advancing the laminate over the roller such that the radius of curvature of the laminate material innermost of the roller and the laminate material outermost of the roller are determined by the expressions:

2. $r_1 = r_o + T_a/2$

3. $r_2 = r_o + T_s + T_a + T_r/2$, respectively,

where

r_o is the radius of the spherical segment of the roller;

r_1 is the radius of the center line of the laminate material innermost of the roller;

r_2 is the radius of the center line of the laminate material outermost of the roller;

Δl_s is the length of expansion of the laminate material innermost of the roller;

Δl_r is the length of expansion of the laminate material outermost of the roller;

t_r is the temperature of the laminate at the predetermined elevated temperature minus ambient temperature;

T_s is the thickness of the laminate material innermost of the roller;

T_r is the thickness of the laminate material outermost of the roller;

T_a is the thickness of the adhesive; and

cooling the materials to reach ambient temperature while removing the three-dimensional curvature so that a flat and substantially stress free laminate results;

the laminate being advanced along the path past the roller such that the three-dimensional curvature is imparted and removed continuously in successive portions of the materials forming the laminate.

3,967,998

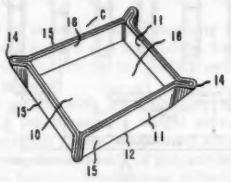
POLYETHYLENE TEREPHTHALATE/PAPERBOARD LAMINATE AND METHOD OF MAKING IT, CONTAINER BLANK FORMED FROM SUCH LAMINATE AND CONTAINER FORMED FROM SUCH BLANK, AND COOKING METHOD USING SUCH CONTAINER

William Paul Kane, Bon Air, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 281,943, Aug. 18, 1972, Pat. No. 3,924,013. This application May 9, 1974, Ser. No. 468,536

Int. Cl.[2] B29C *19/00*

U.S. Cl. 156—226 **8 Claims**



1. A method of forming a container including the steps of:

forming a blank formed from a laminate including paperboard having a layer of substantially amorphous polyethylene terephthalate extruded onto an uncoated surface thereof and wherein such surface is heated to a temperature of at least about 285°F. prior to such extrusion;

folding the blank to bring surface portions of the amorphous polyethylene terephthalate layer thereof into abutting contact with other surface portions of such layer and

heat-sealing these abutting surface portions together.

3,967,999

HIGH FREQUENCY PLASTIC WELDING FLUX

Dieter Sommerfeld, Monheim-Baumberg; Bernhard Kowald, Opladen-Lutzenkirchen, and Monika Winkels, Dusseldorf-Wersten, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Oct. 29, 1974, Ser. No. 518,246

Claims priority, application Germany, Nov. 3, 1973, 2355016

Int. Cl.[2] B29C *27/04*

U.S. Cl. 156—273 **5 Claims**

1. In the process for preparing a welded article by high-frequency welding comprising

providing a layer of thermoplastic material and a substrate;

coating at least one of said layer of thermoplastic material or said substrate with an intermediate material;

juxtaposing said layer of thermoplastic material and said substrate with said coating of intermediate material therebetween;

welding said layer of thermoplastic material to said substrate by application of a high-frequency electric field; and

recovering said welded article: the improvement wherein said intermediate coating material is a high frequency plastic welding flux consisting essentially of

A. from 20 to 40% by weight based upon the total weight of a redispersible powder of a polymer prepared by

suspension polymerization selected from the group consisting of (1) polyvinyl chloride, (2) copolymer of vinyl chloride with up to 20% by weight based upon the copolymer weight of an olefinically-unsaturated monomer copolymerizable with vinyl chloride, and (3) the mixtures of (1) and (2);

B. from 1 to 5% by weight based upon the total weight of a nonion surface-active agent; and

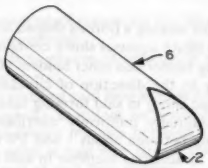
C. the remainder up to 100% by weight of an aqueous medium selected from the group consisting of water and aqueous dispersions of polymers selected from the group consisting of copolymerizates of styrene and acrylic acid, copolymerizates of styrene and butadiene, copolymerizates of styrene and maleic acid anhydride, copolymerizates of styrene, butadiene and maleic acid anhydride, vinyl acetate polymers and copolymerizates of vinyl acetate and ethylene.

3,968,000

METHOD FOR MAKING PIPE END PLUGS

James C. Carroll, Bartlesville, Okla., and Ciel H. Shafer, Perryton, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 7, 1975, Ser. No. 565,871
Int. Cl.² B32B *31/00*; **F16L** *55/10*; **B23K** *9/02*; **B65D** *7/42*
U.S. Cl. 156—258 **7 Claims**



1. A method for the production of an end plug for a thermoplastic pipe which comprises the steps of

a. removing a V-shaped section of pipe wall from a first pipe having an outer diameter D;

b. removing a portion of the butt end of a second pipe having an outer diameter D, so as to form the end into a complementary shape to that of said V-shaped section of said first pipe;

c. cutting a hole from said V-shaped section of said first pipe to allow passage of a bolt therethrough to accommodate a complementary shaped inner jig having an outer diameter approximately equal to the inner diameter of said first pipe, and a complementary shaped outer jig having an inner diameter approximately equal to said outer diameter D;

d. affixing said inner jig and said outer jig with said bolt to said V-shaped section;

e. heating to heat-sealing temperature said V-shaped section in the region of the face of the pipe wall;

f. heating to heat-sealing temperature said butt end in the region of the face of the pipe wall of the complementary shape;

g. pressing together said V-shaped section and said complementary shaped butt end so as to form an end plug;

h. reducing the temperature of the heated region to below heat-sealing temperature;

i. removing said jigs and said bolt; and

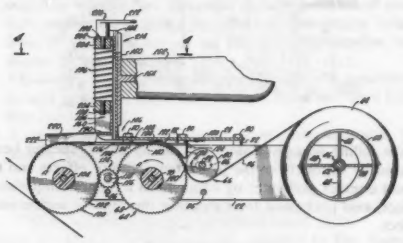
j. filling in said hole in said V-shaped section by fusing a plug of the same thermoplastic into said hole.

3,968,001

AUTOMATIC TAPE DISPENSER

William G. Lockwood, 4800 Clair Del, Long Beach, Calif. 90808

Filed Sept. 26, 1974, Ser. No. 509,554
Int. Cl.² B32B *31/00*; **B44C** *7/06*
U.S. Cl. 156—523 **5 Claims**



1. A portable tape dispenser, which comprises,

a dispensing body comprising a pair of laterally spaced elongate sides fixedly connected to each other,

a tape supply spool rotatably mounted to said body at one end thereof,

pressure wheels rotatably mounted to said body at the other end thereof,

first and second mutually spaced feed wheel shafts mounted to said body,

first feed wheels and second feed wheels mounted upon respective ones of said first and second shafts for rotation between said pressure wheels and tape supply spool, at least one of said pressure wheels and one of said first feed wheels having mutually spaced toothed peripheries,

means for urging said first feed wheels and second feed wheels toward each other,

tape guide means mounted on said body for providing a tape guide path from said feed wheels toward said pressure wheels,

means for driving one of said first feed wheels and second feed wheels in response to rotation of said pressure wheels,

a roll of tape mounted on said supply spool and including a tape portion extending under said second feed wheels, over said first feed wheels, through said guide means and freely and loosely over and beyond said pressure wheels,

a cutter support fixed to said body and upstanding therefrom between said first feed wheels and said pressure wheels, said tape guide means including a guide plate positioned below said tape and having an edge substantially aligned with one side of said cutter support, blade guide means fixed to said cutter support, a cutter blade slidably mounted in said guide means for motion toward and away from said guide plate edge, a handle fixed to said cutter support, means for urging said cutter blade away from said guide plate edge, and means connected with said cutter blade and generally in line therewith adapted to be engaged by the thumb of a hand that grasps said handle for pressing said blade toward said guide plate edge to shear a tape section extending therebetween.

3,968,002

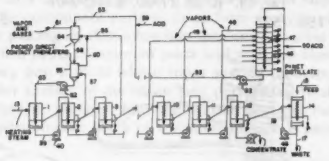
FEED HEATING METHOD FOR MULTIPLE EFFECT EVAPORATORS

Ferris C. Standiford, 2713 S. North Bluff Road, Greenbank, Wash. 98253

Filed Mar. 7, 1975, Ser. No. 556,472
Int. Cl.² B01D *1/14*, *1/22*, *1/26*, *1/00*
U.S. Cl. 159—13 A **4 Claims**

1. A feed preheater system for a forward feed multiple effect falling film evaporator, said system comprising a falling

film indirect preheater and a direct vapor contacting preheater, the discharge of the former feeding the latter, said system being constructed and arranged to raise the temperature of the feed to below the atmospheric boiling point thereof



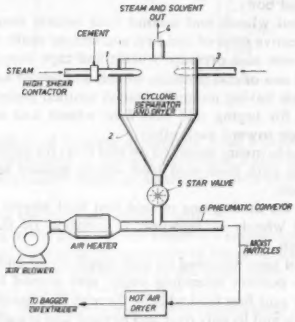
in the falling film preheater, said falling film preheater being heated by vapors from the lower temperature effects and the direct contact preheater by vapor from a higher temperature effect, said preheated feed entering the highest temperature effect.

3,968,003

PROCESS OF RECOVERING POLYMERS FROM THEIR SOLUTIONS

Anthony C. Wolfe, Los Alamitos, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1974, Ser. No. 501,539
Int. Cl.² B01D *1/16, 1/14*; C08L *9/00*
U.S. Cl. 159—48 R **8 Claims**



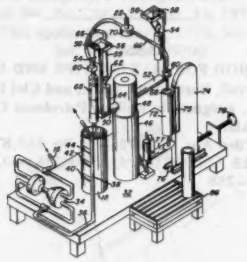
1. In the process for the recovery of polymers from their solutions which comprises mixing steam of at least 50 psig and polymer cement in a high shear mixing-contacting zone whereby part of the solvent is vaporized and solid polymer particles are formed, passing the mixture of particles, cement, vaporized solvent, and steam to a cyclone separation, whereby further solvent vapors are released therein and all vapors and steam are separated from the resulting polymer particles, said particles bearing condensed steam and residual solvent in minor amounts being conveyed to a hot air dryer where the residual solvent and condensed steam are removed, the improvement in controlling the recovered polymer particle size which comprises tangentially feeding steam and polymer cement into said high shear mixing-contacting zone in a steam to cement weight ratio of from about 0.5:1.0 to about 1.0:1.0 where the cement has a polymer concentration from about 5 to about 60 percent by weight and the steam is at a temperature between about 150°C and about 225°C and a pressure between about 50 psig to about 100 psig and passing the high shear contacting zone product to said cyclone separation for additional vaporization and thereby forming additional particles as the sheared product enters the cyclone separator and tangentially feeding a second quantity of steam through a separate steam inlet into the cyclone separator expressed in steam to initial cement weight ratio of from about 1.0:1.0 to 0.5:1.0 thereby reducing the residual solvent and condensed steam level of the resulting particles to below about 2.0 parts per hundred polymer.

3,968,004

PROCESS FOR MAKING A SHAPED FIBROUS ARTICLE BY A VACUUM FORMING PROCESS AND THE SHAPED FIBROUS ARTICLE MADE THEREBY

Fred Simms Coffey, Bradford; Harold Lloyd Weaver, Port Allegany, and Howard Beattie Johnson, Bradford, all of Pa., assignors to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1973, Ser. No. 417,976
Int. Cl.² D21F *11/00*
U.S. Cl. 162—152 **11 Claims**



1. A process for making a fibrous shaped article comprising,
introducing a dilute aqueous slurry containing mineral wool fibers, a clay binder and other binders into a forming tank tangentially to the direction of circulation to toroidally circulate said slurry in said forming tank to maintain said solids substantially uniformly distributed therein, said slurry having between about 1 and 5% solids by weight,
positioning a foraminous member in said circulating slurry in said forming tank so that said foraminous member is submerged in said slurry,
applying a suction to an internal portion of said foraminous member and accreting a substantially uniform layer of said solids in said slurry on the outer surface of said foraminous member,
maintaining said foraminous member submerged in said slurry while accreting said substantially uniform layer of said solids thereon,
trimming the outer surface of said layer of accreted solids while said layer of accreted solids is on said foraminous member to form a shaped article having an inner surface with the configuration of the outer surface of said foraminous member and an outer surface of a preselected configuration,
thereafter removing said shaped article from said foraminous member, and
drying said shaped article to remove substantially all of the liquid in the shaped article of accreted solids.

3,968,005

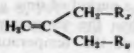
PAPER SIZING PROCESS USING A REACTION PRODUCT OF MALEIC ANHYDRIDE WITH A VINYLIDENE OLEFIN

Otto B. Wurzburg, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 404,595, Oct. 9, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 569,816
The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.
Int. Cl.² D21D *3/00*
U.S. Cl. 162—158 **9 Claims**

1. The method of sizing paper which comprises the step of intimately dispersing within the wet pulp, prior to the ultimate

conversion of said pulp into a dry web, a sizing agent which comprises the non-polymeric reaction product of maleic acid anhydride with a vinylidene olefin corresponding to



wherein R_x and R_y are alkyl radicals containing at least 5 carbon atoms in each radical.

3,968,006

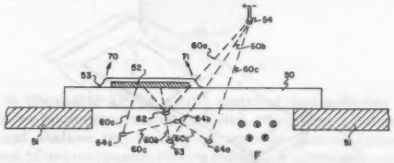
PULP BLEACHING PROCESS CONTROL USING PHOTOCELLS TO MEASURE PULP BRIGHTNESS

William E. Zimmerman, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,414

Int. Cl.² D21C 9/10, 9/12

U.S. Cl. 162—198 **6 Claims**



1. A chlorine flow control system for the bleaching of wood pulp, said system comprising:

A. a continuous flow stream of wood pulp suspended as a dilute aqueous slurry;

B. a conduit for carrying said flow stream having sufficient volumetric capacity to retain an element of said flow stream at least fifteen minutes between a chlorine solution injection point in said flow stream and pulp washing means at the end of said flow stream;

C. First transparent window means in said conduit approximately one to five minutes downstream of said chlorine injection point;

D. Second transparent window means in said conduit prior to said pulp washing means;

E. First and second selenium photocells having photo-sensitive face planes secured contiguous with outer planes of respective window means wherein the photocells form an angle relative to said respective window means neutralizing the effect of consistency;

F. A source of white light directed past said photocells, through said windows and into said flow stream, said photocells being responsive to the relative magnitude of white light reflected from said wood pulp to emit respective first and second electrical signals proportional thereto;

G. First differentiator means to receive said second photocell signal from said second photocell for comparison to an independently variable first set-point signal.

H. Second differentiator means to receive said first photocell signal for comparison to a second set-point signal that is dependently variable relative to the difference between said second photocell signal and said first set-point signal; and,

I. Chlorine flow regulating means for controlling the flow of chlorine into said flow stream at said injection point responsive to the difference between said first photocell signal and said second set-point signal.

5. A method for measuring the brightness of a low consistency slurry of wood pulp, said method comprising the steps of:

A. Providing a transparent window in a conduit carrying a low consistency flow stream of wood pulp, said window having an exterior planar surface disposed substantially parallel to the flow direction of said flow stream;

B. Positioning a selenium photocell having a planar, photosensitive face contiguously adjacent said exterior window surface;

C. Providing a source of white light directed past said photocell, through said window and into said flow stream;

D. Adjusting the planar angle of said photocell relative to said flow stream flow direction and the position of said light source to neutralize the effect of consistency variations in said flow stream on the power generation response of said photocell;

E. Measuring the magnitude of electrical power generated by said photocell responsive to light reflected from said flow stream, and;

F. Correlating photocell power generation responses to relative magnitudes of wood pulp brightness.

3,968,007

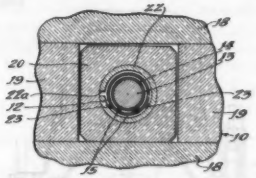
NEUTRONIC REACTOR CONSTRUCTION

Norman E. Huston, Fullerton, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 9, 1952, Ser. No. 324,885

Int. Cl.² G21C 5/02

U.S. Cl. 176—41 **2 Claims**



1. A neutronic reactor comprising a moderator including horizontal layers formed of horizontal rows of graphite blocks, alternate layers of blocks having the rows extending in one direction, the remaining alternate layers having the rows extending transversely to the said one direction, alternate rows of blocks in one set of alternate layers having longitudinal ducts, the moderator further including slotted graphite tubes positioned in the ducts, the reactor further comprising an aluminum coolant tube positioned within the slotted tube in spaced relation thereto, bodies of thermal-neutron-fissionable material, and jackets enclosing the bodies and being formed of a corrosion-resistant material having a low neutron-capture cross section, the bodies and jackets being positioned within the coolant tube so that the jackets are spaced from the coolant tube.

3,968,008

FISSILE ELEMENT AND A METHOD FOR CHARGING OR RECHARGING IT

Gijsbrecht Gerhardus Piepers, Heiloo; Christiaan Gustaaf Adolf Scholtus, Alkmaar, and Leonard Hendrik Vons, Bergen, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed Apr. 11, 1973, Ser. No. 349,940

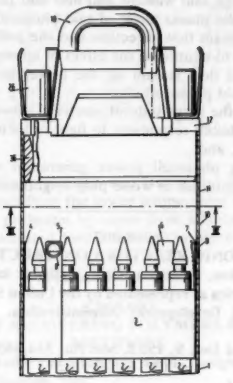
Claims priority, application Netherlands, Apr. 20, 1972, 7205288

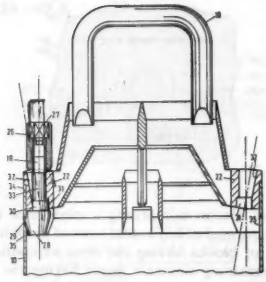
Int. Cl.² G21C 3/32

U.S. Cl. 176—78 **4 Claims**

1. A fuel assembly for a nuclear reactor comprising an open-ended elongated approximately prismatic sleeve with solid side walls, a plurality of spaced fuel elements vertically disposed in said sleeve and supported therein by a bottom plate and a plurality of intermediate lattices for lateral sup-

port, said bottom plate being anchored to said sleeve, said sleeve containing near the upper end a plurality of open recesses in the walls thereof, a removable head fitted to the top of said sleeve and connected to the sleeve in an easily detachable manner by means of a plurality of bolts passing through





passages in said head, said bolts having boltheads at one end thereof, said boltheads each having a portion projecting into and engaging one of said open recesses and said passages being contoured to allow said bolts to tilt to facilitate movement of said boltheads into and out of said recesses.

3,968,009

PROCESS FOR REDUCING NUCLEIC ACID CONTENT OF YEASTS AND BACTERIA

Steven R. Tannenbaum, Framingham; Anthony J. Sinskey, Boston, both of Mass., and Stephen B. Maul, Flemington, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 340,022, March 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 53,263, July 8, 1970, Pat. No. 3,720,585. This application May 19, 1975, Ser. No. 578,772

The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.

Int. Cl.[2] C12C *11/00*

U.S. Cl. 195—98 **11 Claims**

1. A process for reducing the nucleic acid content in a unicellular substance selected from the group of yeasts and bacteria comprising the steps of:

heat shocking said unicellular substance for a period of time and at a temperature selected to increase the activity of enzymes inside the cells of said unicellular substance sufficiently to enable said enzymes to break down nucleic acids into smaller fragments, said heat shock being insufficient to rupture substantial numbers of cell walls or to induce protein to leak out of said cells, and;

incubating cells which have been subjected to said heat-shocking step for a period of time and at a temperature which is lower than the temperature selected in said heat-shocking step, the temperature at which heat-shocked cells are incubated being a temperature at which the cells of said unicellular substances remain intact but at which nucleic acid fragments permeate the walls of said cells.

3,968,010

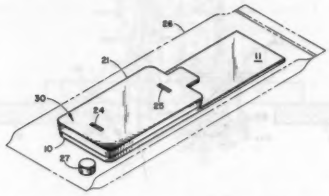
MICROBIOLOGICAL CULTURING METHOD AND MEANS

Frank Edward Young, Pittsford, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 8, 1975, Ser. No. 638,652

Int. Cl.[2] C12K *1/06*

U.S. Cl. 195—103.5 R **22 Claims**



1. In a method for culturing or detecting an osmotically fragile microorganism which comprises the steps of rehydrating a substantially dry, water-absorbent, nutrient-incorporated matrix by contact with an aqueous liquid, simultaneously or subsequently contacting said matrix with said microorganism or with a test specimen suspected of containing said microorganism, and thereafter incubating said test specimen in contact with the rehydrated matrix, the improvement which comprises including in said rehydrating aqueous liquid a water soluble polyhydric alcohol.

7. Means for culturing an osmotically fragile microorganism comprising a substantially dry, water-absorbent matrix incorporated with microbiological nutrient material sufficient to support the growth of said microorganism, and an aqueous rehydration liquid therefor containing a water soluble polyhydric alcohol.

3,968,011

TEST IMPLEMENT AND TEST METHOD FOR COLORIMETRICALLY DETERMINING WHETHER A FEMALE IS FERTILE OR PREGNANT

Jorge Martinez Manautou, and Adolfo Rosado Garcia, both of Mexico City, Mexico, assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 333,029, Feb. 16, 1973, Pat. No. 3,875,013. This application Mar. 27, 1975, Ser. No. 562,743

The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.

Int. Cl.[2] G01N *31/14*, *33/16*

U.S. Cl. 195—103.5 R **17 Claims**

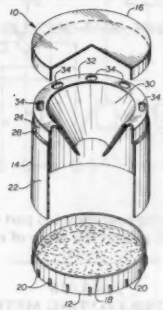
1. A test implement for colorimetrically determining the quantity of N-acetyl-β-glucosaminidase present in a female biological medium, said quantity being indicia of fertility or pregnancy, comprising an absorbent material containing a buffer that is capable of maintaining an acidic pH and an effective amount of an N-acetyl-β-d-glucosaminide that reacts in the presence of said glucosaminidase at said pH to form a reaction product that has a distinct color at a predetermined pH.

3,968,012

AEROSOL BACTERIAL CONTAMINATION TEST KIT

Jay A. Jones, 4141 W. Mercer Way, Mercer Island, Wash. 98040

Filed June 6, 1975, Ser. No. 584,372
Int. Cl.² C12B 1/02
U.S. Cl. 195—142 10 Claims



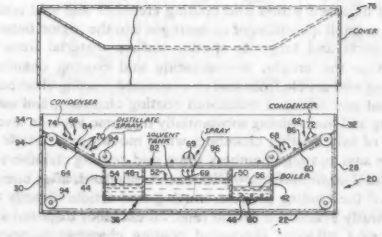
1. A disposable kit for sterile sampling and culturing of gas-borne microorganisms and the like, comprising a rimmed, flat and shallow tray having an internal bottom coating thereon of microorganism culture medium, a removable cover for said tray, and an enclosed gas-flow directing chamber having one end open to which the tray is removably fitted so as to protectively close said one end in substantially airtight relationship, having an opposite end open to which the tray cover is removably fitted so as to protectively close said opposite end in substantially airtight relationship in pre-use storage thereof, said opposite end having inlet orifice means rimmed by an inwardly convergent exteriorly presented chamber wall defining a locating funnelling receptacle for placement of the end of a gas supply hose so as to direct gases from the hose through said inlet orifice into the chamber interior, and said opposite end further having an outlet orifice means formed therein adjacent to but separated by said wall from said inlet orifice, for the discharge of gases from the chamber after such gases have flowed against said tray interior.

3,968,013

SYSTEM FOR CLEANING WORK PIECES WITH SOLVENT

Kenneth G. Boynton, Milford, N.H., assignor to Hollis Engineering, Inc., Nashua, N.H.

Filed Sept. 12, 1974, Ser. No. 505,317
Int. Cl.² B01D 3/00; B65G 19/00; B08B 3/00
U.S. Cl. 202—170 7 Claims



1. In a system for cleaning work pieces with an organic solvent vapor, and having a tank for containing a liquid body of said solvent, a frame for supporting said tank, and means disposed in said tank for heating at least a portion of said solvent to boiling whereby to generate a quantity of solvent vapor above said tank, and means disposed above said tank for limiting the level of solvent vapor above said tank, the improvement comprising;

means for moving said work pieces in and out of contact with said solvent vapor and comprising

an array of substantially parallel, spaced, elongated members each having a central portion depressed with respect to its end portions, said elongated members extending through and between said end portions, at least one intermediate section rigidly joining said elongate members so as to preserve the parallel relationship of said elongated members, means for supporting said array in a fixed position relative to said tank and frame so that said central portion of said array is located so as to be enveloped in said quantity of solvent vapor, and the end portions of said array are disposed to be above said level of solvent vapor, and

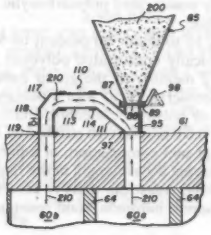
means for moving said work pieces across the top surface of said array in the direction of elongation of said members.

3,968,014

COLLECTION DEVICE FOR COKE OVEN GASES

Frank K. Armour, Flossmoor, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Mar. 29, 1974, Ser. No. 456,056
Int. Cl.² C10B 31/00, 31/04, 35/00
U.S. Cl. 202—263 10 Claims



1. A system for preventing effluents containing coal dust from being emitted from coke ovens upon charging certain of the coke ovens with coal while coking in others of the coke ovens, comprising means for providing communication between one end of a first oven being charged with coal and one end of a second oven having coal coking therein, means for introducing air into the second oven with the effluents flowing from the first oven through said communication means, a venturi tube in communication with the other end of the second oven, said venturi tube having a restriction therein to accelerate effluents therethrough at a rate sufficient to accommodate substantially all of the effluents produced during the charging of the first coke oven, and means connected to said venturi tube for reducing the pressure in the venturi tube and in the second oven adjacent thereto to increase the draft through the second oven thereby facilitating flow of effluents from the first oven through the entire second oven to said venturi tube, whereby effluents containing coal dust produced during the charging of coal to the first oven are drawn through the entire second oven with sufficient oxygen to incinerate the coal dust and are accelerated through said venturi tube sufficiently to prevent effluents containing coal dust from leaking to the atmosphere due to pressure build-up in the first oven.

3,968,015

POLY(TETRAMETHYLENETEREPHTHALATE) CROSSLINKED BY IRRADIATION

David D. Nyberg, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 11, 1973, Ser. No. 405,522
Int. Cl.² C08F 8/00; C08G 18/00
U.S. Cl. 204—159.15 9 Claims

1. A process for crosslinking poly(tetramethyleneterephthalate) comprising subjecting poly(tetramethyleneterephthalate) containing at least one part per 100 of N,N'-m-phenylenedimaleimide to irradiation with ionizing radiation to a dose of from about 2 to about 80 megarads and to a heating step wherein said heat may be applied during or after irradiation.

3,968,016

MIXTURE OF UNSATURATED POLYESTER RESINS WITH AN EPOXY DIACRYLATE AND THE ACTINIC LIGHT TREATMENT OF SAME

Marco Wismer, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 254,060, May 17, 1972, abandoned.
This application May 14, 1973, Ser. No. 360,253
Int. Cl.² C08F 8/00
U.S. Cl. 204—159.16 10 Claims

1. The method comprising subjecting, in the presence of air, a composition comprising an actinic light sensitive mixture of compounds comprising

a. an ethylenically unsaturated polyester of an alpha, beta ethylenically unsaturated polycarboxylic acid and a polyhydric alcohol,

b. from about 10 to about 80 percent by weight, based on said ethylenically unsaturated polyester, of the reaction product of a member of the group consisting of acrylic acid and methacrylic acid with a polyglycidyl ether of a polyphenol or polyhydric alcohol, and

c. from about 0.01 to about 10 percent by weight, based on the weight of said composition, of a photosensitizer

to actinic light having a wavelength in the range of from about 1800 to about 4000 Angstrom units to cure said composition and to impart thereto hardness, stain resistance and abrasion resistance.

3,968,017

PROCESS AND AN EQUIPMENT FOR PRODUCING CRYSTALLINE CITRIC ACID FROM SOLUTIONS OF ALKALINE CITRATES

Pierluigi Canata, Pellaro (Reggio Calabria), and Giampiero Longobardi, Rome, both of Italy, assignors to Compagnia Tecnica Industrie Petroli S.p.A., Rome and Liquichimica S.p.A., Milan, both of, Italy

Filed Feb. 6, 1975, Ser. No. 547,556
Claims priority, application Italy, Feb. 13, 1974, 48311/74
Int. Cl.² B01D 13/02
U.S. Cl. 204—180 P 5 Claims

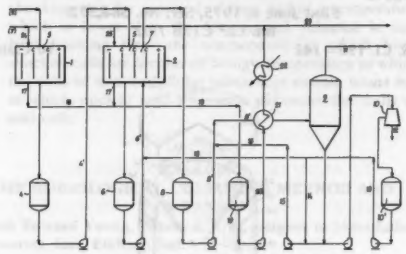
1. A process for producing citric acid in crystalline form from solutions of alkaline citrates, characterized in comprising sequentially the stages of:

a. partially converting by electrodialysis the alkaline citrate to citric acid;

b. concentrating by hot fractional crystallization the solution of citric acid and alkaline citrate as obtained in (a), heat for the crystallization being supplied by heat exchange from the hot cathodic solution of electrodialysis stage (a);

c. separating by centrifugation the crystalline citric acid from the concentrated solution coming from (b);

d. re-cycling the mother liquors of crystallization residual



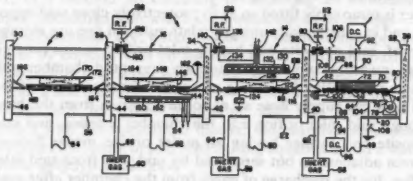
from the separating operation (c) part to the electrodialysis stage (a) and part to the stage of crystallization (b).

3,968,018

SPUTTER COATING METHOD

George C. Lane, Danbury; Cyril A. Cartwright, Monroe, and Keith W. Elmslie, Guilford, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 861,937, Sept. 29, 1969, abandoned.
This application July 25, 1974, Ser. No. 491,717
Int. Cl.² C23C 15/00
U.S. Cl. 204—192 12 Claims



12. A method of cleaning and coating at least one article comprising, inserting said article into a cleaning chamber, evacuating said cleaning chamber, establishing a high electrical potential between said article and a reference point within said cleaning chamber, introducing a minute quantity of an inert gas into the region between said article and said reference point to clean said article by ionic surface bombardment, transferring said article directly from said cleaning chamber to an evacuated coating chamber while maintaining a high vacuum level in said cleaning chamber, isolating said cleaning chamber from said coating chamber into which said article is transferred, establishing an electrical potential between a target disposed within said coating chamber and said article, leaking small quantities of an inert gas into the region between the article and target to sputter surface material from the target to the article, re-evacuating said coating chambers, moving said article from said re-evacuated coating chamber to at least one adjacent evacuated coating chamber, and establishing and maintaining substantially the same vacuum level in each of said coating chambers while moving said article between said coating chambers when said coating chambers are in spatial communication with each other, and, after completion of the coating process, moving said article directly to a previously evacuated article removal chamber disposed adjacent said adjacent evacuated coating chamber to prevent communication between an outside atmosphere and said adjacent evacuated coating chamber, isolating said adjacent evacuated coating chamber from said removal chamber and removing said article from said removal chamber while said adjacent evacuated coating chamber is isolated therefrom.

3,968,019
METHOD OF MANUFACTURING LOW POWER LOSS SEMICONDUCTOR DEVICE

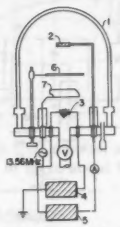
Masanobu Hanazono; Osamu Asai; Moriaki Fuyama; Masao Iimura; Hideyuki Yagi, and Masahiro Okamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 21, 1975, Ser. No. 560,880

Claims priority, application Japan, Mar. 25, 1974, 49-32574

Int. Cl.² C23C *15/00;* **H01L** *29/48*

U.S. Cl. 204—192 **13 Claims**



1. A method of manufacturing a low power loss semiconductor device comprising supporting a semiconductor substrate on a cathode in an inert gas atmosphere of low pressure, the semiconductor substrate including a lower resistivity layer and a higher resistivity layer adjacent thereto, the higher resistivity layer being doped with sufficient impurities to provide a resistivity of about 0.1 to 10 Ω. cm, and bombarding the surface of the higher resistivity layer of the semiconductor substrate with metal particles ionized in a glow discharge region to deposit a metal coating on the semiconductor substrate thereby forming a semiconductor-metal contact junction.

3,968,020
APPARATUS FOR SURFACE TREATING METAL MEMBERS

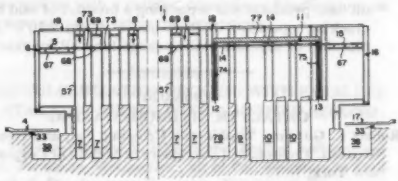
Toshihiro Nagano; Masashi Ikegaya; Tadao Maruyama; Fumio Shigeta, and Yoshio Sano, all of Shizuoka, Japan, assignors to Riken Keikinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sept. 17, 1974, Ser. No. 506,726

Claims priority, application Japan, Sept. 29, 1973, 48-110044; Dec. 5, 1973, 48-137510

Int. Cl.² C25D *17/06*

U.S. Cl. 204—203 **12 Claims**



1. Apparatus for surface-treating a plurality of workpieces simultaneously comprising:

a. at least one means at a given position for treating the workpieces;

b. a detached carrier bar having devices for receiving and vertically suspending the plurality of the workpieces in side-by-side relationship;

c. loading means having frame means for receiving and releasing said carrier bar and for rotating between horizontal and vertical positions while retaining said carrier bar horizontally and broadside;

d. first lifting means for receiving said carrier bar when loaded with the workpieces from said loading means in its vertical position and for returning said carrier bar when unloaded to said loading means, said lifting means being vertically movable between lower and higher positions with said carrier bar retained horizontally thereon by its ends;

e. conveyor means for receiving said loaded carrier bar from said first lifting means at said higher position and for conveying said carrier bar by its ends horizontally and broadside;

f. second lifting means positioned above said treating means and interacting with said conveyor means for vertically moving said carrier bar in a horizontal position with said plurality of workpieces suspended therefrom downwardly into and upwardly from said treating means and back substantially to the level of said higher position;

g. unloading means having frame means for receiving and releasing said carrier bar and for rotating between vertical and horizontal positions while retaining said carrier bar horizontal and broadside;

h. third lifting means for receiving said carrier bar when loaded with the workpieces from said conveyor means and lowering said carrier bar to said unloading means in its vertical position and for receiving said carrier bar when unloaded from said unloading means and raising said unloaded carrier bar vertically; and

i. return conveyor means for receiving said unloaded carrier bar from said third lifting means and returning said unloaded carrier bar broadside to said first lifting means for lowering to said loading means in its vertical position.

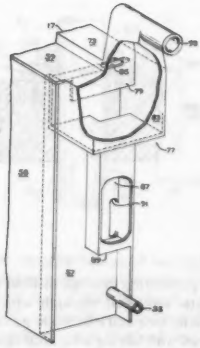
3,968,021
ELECTROLYTIC CELL HAVING HYDROGEN GAS DISENGAGING APPARATUS

Henry W. Rahn, Pittsburgh, Pa.; Hugh Cunningham, Corpus Christi, Tex.; Colonel R. Dilmore, New Martinsville, Tex.; Thomas C. Jeffery, Lake Charles, Tex., and Carl W. Raetzsch, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 457,299, April 2, 1974, Pat. No. 3,938,150. This application May 29, 1975, Ser. No. 581,601

Int. Cl.² C23B *9/00*

U.S. Cl. 204—256 **4 Claims**



1. In a chlor-alkali bipolar electrolyzer comprising a plurality of individual diaphragm cells electrically and mechanically in series, each of said cells comprising:

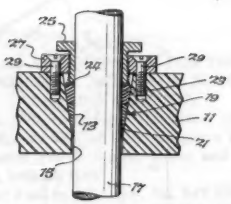
a first cell unit having an anolyte-resistant backplate;
anode means mounted on the backplate of said first cell unit;
a second cell unit having a catholyte-resistant backplate;
hollow cathode means mounted on the backplate of said second cell unit;
permeable barrier means interposed between said anode means and said hollow cathode means, and dividing said individual cell into an anolyte chamber and a catholyte chamber including said hollow cathode means;
means for feeding brine to said cell;
means for recovering anodic gas of said cell;
means for recovering cathodic gas from the catholyte chamber of said cell; and
means for recovering cell liquor from the catholyte chamber of said cell;
the improvement wherein said cathodic gas recovery means comprises:
horizontal channel means extending across substantially the entire width of said cell and separate from said catholyte chamber;
a plurality of apertures between said channel means and said catholyte chamber, at least one of said apertures being at an end of the channel means opposite an outlet therefrom;
gas disengaging means at the outlet of said channel means, which disengaging means comprises:
a disengaging chamber;
catholyte gas downward deflection means and catholyte gas upward deflection means interposed between the outlet of said horizontal channel and the gas outlet of said disengaging chamber whereby to deflect catholyte gas first downward and then upward;
hydrogen recovery means at the outlet from said disengaging means; and
catholyte liquor recovery means.

3,968,022

ELECTROLYTIC CELL SEAL

Jeffrey D. Eng, North Vancouver; Cyril J. Harke, Burnaby; Primo Bosa, Vancouver, all of Canada, and Wilfredo E. Figueras, Amherst, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,741
Int. Cl.[2] C25B *1/26, 9/00, 9/02*
U.S. Cl. 204—279 **6 Claims**



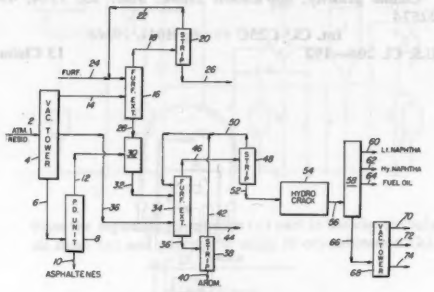
1. A seal for preventing passage of fluid through an opening in an electrolytic cell wall through which a conductor for carrying electricity to a cell electrode passes which comprises a portion of a cell wall having a tapered opening therein which is larger at the outer part of the wall than at the inner part, silicone rubber in the narrower tapered opening part, an electrolyte-resistant rubber in the wider tapered opening part and means for pressing such rubber against the silicone rubber so as to help tightly seal the silicone rubber against the wall and the conductor.

3,968,023

PRODUCTION OF LUBRICATING OILS

Tsoung-Yuan Yan, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,655
Int. Cl.[2] C10G *37/00*
U.S. Cl. 208—86 **5 Claims**



1. A method for producing lube oils from an atmospheric residual oil which comprises,
separating an atmospheric residual oil to recover a light vacuum gas oil, a heavy vacuum gas oil and a resid containing asphaltic material, deasphalting said resid to provide a first raffinate product thereof,
solvent extraction said light vacuum gas oil to provide a second raffinate phase and a first extract phase, separating solvent from said extracted light vacuum gas oil, combining said first extract phase with said first raffinate product of said resid deasphalting operation to form a mixed oil phase comprising solvent with extracted polycyclic aromatics,
using said mixed oil extract phase with solvent to remove undesired aromatics from said heavy vacuum gas oil in a second solvent extraction zone,
recovering a second extract phase from said second solvent extraction zone and separating solvent from aromatics in said second extract phase, recycling solvent thus separated to said second solvent extraction zone,
recovering a third raffinate phase from said second solvent extraction zone and separating solvent from an oil phase comprising said third raffinate and boiling above about 800°F., recycling solvent thus separated to said second extraction zone,
passing said oil phase boiling above about 800°F. to a hydrocracking zone maintained under relatively mild hydrocracking conditions selected to enhance the yield of lube oil base products and separating a product of said hydrocracking operation boiling above about 650°F into a plurality of separate boiling range lube oil fractions.

3,968,024

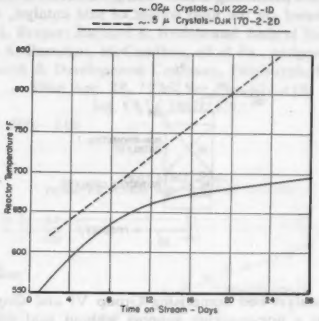
CATALYTIC HYDRODEWAXING

Robert L. Gorring, Washington Crossing, Pa., and George F. Shipman, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 377,157, July 6, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,670
Int. Cl.[2] C10G *13/02, 11/04;* **B01J** *29/28*
U.S. Cl. 208—111 **7 Claims**

1. In the process of upgrading hydrocarbon feeds by contacting such with a catalyst comprising a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12, at a temperature of about 500° to 1100°F, a space velocity of about 0.1 to 100 LHSV and a hydrogen to hydrocarbon mole ratio of about 0 to 20; the improvement, whereby eliminating net hydrogen

consumption and increasing catalyst cycle life, which comprises: utilizing a catalyst comprising said zeolite having a



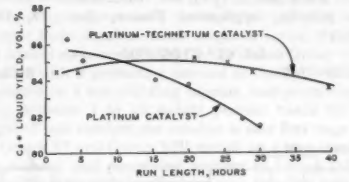
crystal size of up to about 0.05 micron; and operating said process at a total pressure of up to about 500 psig.

3,968,025

HYDROCARBON CONVERSION PROCESS

Melvin M. Holm, Alameda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 20, 1969, Ser. No. 801,008
Int. Cl.² C10G *35/06, 35/08*
U.S. Cl. 208—135 **3 Claims**



1. A catalytic composite comprising a combination of a platinum group metallic component, a technetium component, and a halogen component with an alumina carrier material, said components being present in amounts sufficient to result in the catalytic composite containing, on an elemental basis, about 0.1 to about 10 weight percent halogen, about 0.01 to about 3 weight percent of platinum group metal and about 0.01 to about 10 weight percent technetium.

3. A process for increasing the octane number of hydrocarbons boiling within the gasoline range comprising contacting the hydrocarbons with a catalyst consisting of technetium on an inert support under reforming conditions.

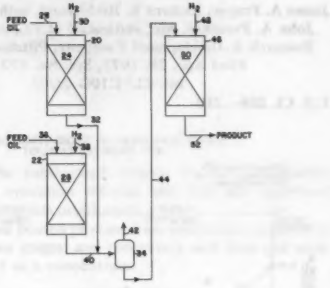
3,968,026

HYDRODESULFURIZATION PROCESS WITH PARALLEL FIRST STAGES IN SERIES WITH A UNIFIED SECOND STAGE

James A. Frayer; Richard E. Hildebrand, both of Indiana, and John A. Paraskos, McCandless, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,419
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **5 Claims**

1. A process for the desulfurization of an asphaltene-containing feed oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psig and a temperature between 600° and 900°F., comprising passing said feed oil together with hydrogen downwardly through at least two prallel first catalytic hydrodesulfurization stages, combining effluent from at least two parallel first stages and passing the combined effluent downwardly through a second catalytic hydrodesulfurization stage, the catalyst in said second stage comprising Group VI and Group VIII metals together with a promoting amount of Group IV-B metal impregnated on a non-cracking support, said promoting amount being between 1 to 10 weight percent based on the total weight of said catalyst the catalyst in said first stage comprising Group VI and Group VIII metals on a non-cracking support without said Group IV-B metal promoting amount of said process including



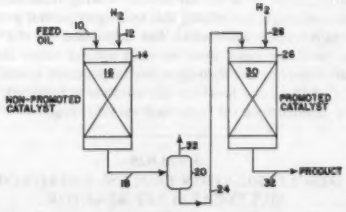
a flashing step between said first and second stages for removing contaminating gases from the oil stream flowing from said first to said second stages interrupting the feed oil and hydrogen being passed through at least one of said parallel first stages which supplies effluent to said second stage to replace deactivated catalyst therein, and continuing to pass said feed oil and hydrogen through at least another of said parallel first stages to supply a reduced oil flow to said second stage during the catalyst replacement step.

3,968,027

MULTI-STAGE HYDRODESULFURIZATION UTILIZING A SECOND STAGE CATALYST PROMOTED WITH A GROUP IV-B METAL

James A. Frayer; Richard E. Hildebrand, both of Indiana, and John A. Paraskos, McCandless, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,460
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **9 Claims**



1. A process for the desulfurization of an asphaltene-containing feed oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psig and a temperature between 600° and 900°F., comprising passing said oil together with hydrogen downwardly through first and second hydrodesulfurization stages in series, the catalyst in said second stage comprising Group VI and Group VIII metals together with a promoting amount of Group IV-B metal impregnated on a non-cracking support, said promoting amount being between 1 to 10 weight percent based on the total weight of said catalyst, the catalyst in said first stage comprising Group VI and

Group VIII metal on a non-cracking support without said promoting amount of Group IV-B metal, said process including a flashing step between said first and second stages for removing contaminating gases from the oil stream flowing from said first to said second stage, and removing desulfurized oil from said second stage.

3,968,028

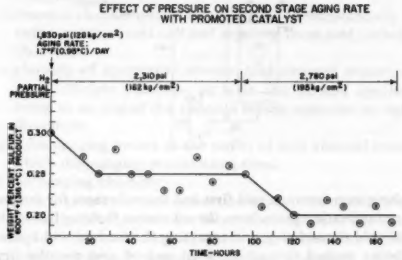
PROCESS FOR ONSTREAM REGENERATION OF A HYDRODESULFURIZATION CATALYST

James A. Frayer; Richard E. Hildebrand, both of Indiana, and John A. Paraskos, McCandless,all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,504

Int. Cl.² C10G *23/02*

U.S. Cl. 208—210 **9 Claims**



1. A process for the desulfurization of an asphaltene-containing feed oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psig and a temperature between 600° and 900°F., comprising passing said oil together with hydrogen downwardly through first catalytic and second catalytic hydrodesulfurization stages in series, said hydrogen being at least one selected from the group of recycle hydrogen and make-up hydrogen, the catalyst in said second stage comprising Group VI and Group VIII metals together with a promoting amount of Group IV-B metal impregnated on a non-cracking support, said promoting amount being between 1 to 10 weight percent based on the total weight of said catalyst, the catalyst in said first stage comprising Group VI and Group VIII metals on a non-cracking support without said promoting amount of Group IV-B metal, said process including a flashing step between said first and second stages for removing contaminating gases from the oil stream flowing from said first to said second stage, increasing the hydrogen partial pressure in said second stage after coke has deposited on the catalyst therein until the coke level on said second stage catalyst is reduced, lowering the hydrogen partial pressure in said second stage after the coke level on the catalyst is reduced, and removing desulfurized oil from said second stage.

3,968,029

DESULFURIZATION PROCESS EMPLOYING MULTI-CATALYST REACTOR

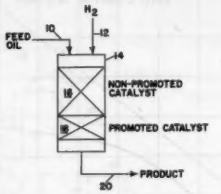
James A. Frayer; Richard E. Hildebrand, both of Indiana, and John A. Paraskos, McCandless, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,417

Int. Cl.² C10G *23/02*

U.S. Cl. 208—216 **7 Claims**

1. A process for the desulfurization of an asphaltene-containing feed oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psig and a temperature between 600° and 900°F., comprising passing said oil together with hydrogen downwardly through a hydrodesulfurization reactor containing an upstream catalyst bed and a downstream catalyst bed, said downstream catalyst bed comprising Group VI and Group VIII metals together with a promoting amount of Group IV-B metal impregnated on a non-cracking support, said promoting amount being between 1 to 10 weight percent based on the total weight of said catalyst, said up-



stream catalyst bed comprising Group VI and Group VIII metals on a non-cracking support without said promoting amount of Group IV-B metal and removing desulfurized oil from said reactor.

3,968,030

METHOD AND AN INSTALLATION FOR IMPROVING THE ENERGY BALANCE OF INSTALLATIONS FOR PROCESSING CHEMICAL PROCESS STREAMS AND ESPECIALLY PETROLEUM REFINERIES

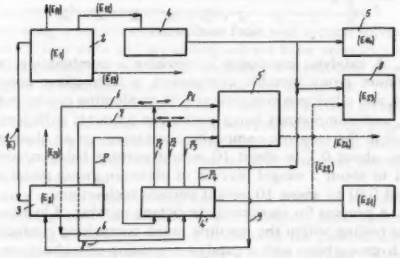
Pierre Cros, Paris, France, assignor to Spie-Batignolles and Societe Generale de Techniques et d'Etudes, both of Puteaux, France

Filed Jan. 3, 1975, Ser. No. 538,380

Claims priority, application France, Jan. 17, 1974, 74.0501541

Int. Cl.² C10G *7/00*

U.S. Cl. 208—347 **8 Claims**

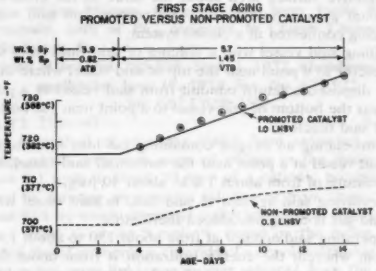


1. A method for improving the energy balance of a petroleum refinery in which crude oil is heated and then distilled in at least one distillation column, comprising the steps of producing steam in a boiler at a pressure of at least about 120 bars, feeding said steam to a back-pressure turbo-alternator that has a plurality of turbine stages that are driven by steam at a plurality of successively lower pressures with the steam moving from stage to stage of said turbine stages as the steam progressively decreases in pressure and in temperature, withdrawing steam from each of a plurality of said turbine stages thereby to produce a plurality of streams of steam of successively different temperature and pressure, heating said crude oil by indirect heat exchage with each of said streams in succession in progressively ascending order of temperature and pressure of said streams, and feeding said heated crude oil into said at least one distillation column after said heat exchange with said stream of highest temperature and pressure.

3,968,031
MULTI-STAGE HYDRODESULFURIZATION PROCESS UTILIZING MULTI-CYCLE SECOND STAGE PROMOTED CATALYST

James A. Frayer; Richard E. Hildebrand, both of Indiana, and John A. Paraskos, McCandless, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,418
Int. Cl.² C10G 23/02
U.S. Cl. 208—210 5 Claims



1. A process for the desulfurization of an asphaltene-containing feed oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psig and a temperature between 600° and 900°F., comprising passing said oil together with hydrogen downwardly through first catalytic and second catalytic hydrodesulfurization stages in series, the catalyst in said second stage comprising Group VI and Group VIII metals together with a promoting amount of Group IV-B metal impregnated on a non-cracking support, said promoting amount being between 1 to 10 weight percent based on the total weight of said catalyst, the catalyst in said first stage comprising Group VI and Group VIII metals on a non-cracking support without said promoting amount of Group IV-B metal, said process including a flashing step between said first and second stages for removing contaminating gases from the oil stream flowing from said first to said second stage, replacing deactivated non-promoted first stage catalyst with fresh non-promoted first stage catalyst at least once without replacing said promoted second stage catalyst so that said promoted second stage catalyst remains onstream for a period equal to at least two first stage catalyst cycles, and removing desulfurized oil from said second stage.

3,968,032
PROCESS FOR CONCENTRATING LEAD AND SILVER BY FLOTATION IN PRODUCTS WHICH CONTAIN OXIDIZED LEAD

Francisco Javier Sitges Menendez; Vicente Arregui Fernandez, and Macario Quesada Quintana, all of Salinas-Castrillon (Oviedo), Spain, assignors to Asturiana de Zinc S.A., Castrillon (Oviedo), Spain

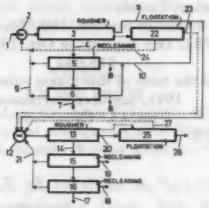
Filed Jan. 22, 1974, Ser. No. 435,409
Claims priority, application Spain, Jan. 27, 1973, 411058
Int. Cl.² B03D 1/02
U.S. Cl. 209—166 7 Claims

1. A flotation process for concentrating lead and silver from electrolytic zinc residues which contain lead sulfate and silver comprising the steps:

subjecting the zinc residue to a "rougher" operation employing collector agents such as xanthates and dithiophosphates and floating in an acid medium most of the silver, sulphur and zinc contained therein:

recleaning said floated product in one to three stages and obtaining a concentrate rich in silver, sulphur and zinc;

treating the residue from said first "rougher" operation with sulphurizing agents to activate the lead component as a pH ranging from 2 to 4.5;



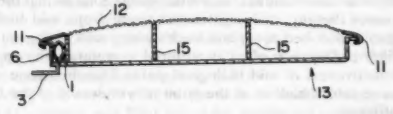
subjecting the sulphurized treated residues to another "rougher" operation wherein said lead and additional silver components are floated;

recleaning said floated product from said treated residues in one to three stages; and recovering said lead and additional silver as a concentrate.

3,968,033
CLAMPING DEVICE FOR SCREEN BOTTOMS

Heinrich Illemann, St. Magdelen near Villach, and Josef Urbanek, Steindorf, both of Austria, assignors to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft, Carinthia, Austria

Filed Feb. 21, 1975, Ser. No. 551,544
Claims priority, application Austria, Feb. 25, 1974, 1493/74
Int. Cl.² B07B 1/48
U.S. Cl. 209—403 8 Claims



1. A screening apparatus comprising:

a. a screen frame having first and second opposed sides;

b. a screen bottom for positioning on said screen frame, wherein said screen bottom has first and second opposed sides corresponding to said first and second opposed sides of said screen frame, said first opposed side of said screen bottom being detachable and attachable to said first opposed side of said screen frame;

c. a fluid pressure source; and

d. means for pneumatically tightening said screen frame, said tightening means being disposed below said screen bottom and horizontally adjacent said second opposed side of said screen frame for tightening said second opposed side of said screen bottom to said second opposed side of said screen frame, and wherein said tightening means includes:

i. a deflatable and inflatable tubular member running substantially the length of said second opposed side of said screen frame, and operatively connected to said fluid pressure source; and

ii. a detached clamping member movably mounted on said screen frame and running horizontally along the length of one side of said tubular member between said tubular member and said second opposed side of said screen bottom, said clamping member being movable by inflation of said tubular member for engagement with said second opposed side of said screen bottom.

3,968,034

PROCESS AND APPARATUS FOR TREATING WASTES BY A COMBINED ACTIVATED SLUDGE AND BIOLOGICAL FILTER BED

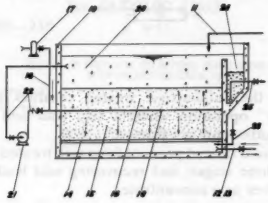
Jerzy Tymoszczuk, 3415 Girouard Ave., Apt. 914, Montreal, N.D.G., Quebec, Canada

Continuation-in-part of Ser. No. 100,220, Dec. 2, 1970, Pat. No. 3,853,752. This application Oct. 15, 1974, Ser. No. 515,044

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.[2] C02C *1/04*

U.S. Cl. 210—8 34 Claims



1. A process for the treatment of wastes such as sewage and waste liquid, said process comprising: maintaining a submerged aerated biological filter bed zone containing finely divided particulate filtering media which is circulated in said zone; maintaining an aerated activated sludge zone in upstream fluid zone, feeding waste to be treated to said activated sludge zone; recycling said waste from said activated sludge zone through said biological filter bed back to said activated sludge zone; maintaining a biological stable filter bed zone in downstream fluid flow relationship to said aerated biological filter bed zone and said activated sludge zone so that the waste passes thereto; draining treated waste from said biological stable filter bed zone; and backwashing said biological stable filter bed zone as often as required to maintain the operating effectiveness of said biological stable filter bed zone and an acceptable headloss at the point of withdrawal of the treated effluent.

3,968,035

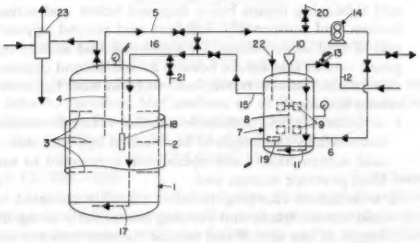
SUPER-OXYGENATION METHOD

Robert H. L. Howe, West Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 348,377, April 5, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,863

Int. Cl.[2] C12B *1/14*

U.S. Cl. 210—15 12 Claims



1. A method for continuously super-oxygenating a portion of the bio-oxidizable fluid from a bio-oxidation reactor to increase the concentration of oxygen dissolved in such fluid and reduce the energy required to effect the dissolution of such oxygen in such fluid comprising the steps of:

a. continuously transferring a stream of said fluid in said reactor from a point near the top of the column of said fluid to a point near the bottom of an oxidator vessel equipped with a high shear agitator, said vessel having a capacity of from about one-tenth to one–two hundreth of the capacity of said reactor and having a diameter to height ratio of from about 1:2 to about 1:10 and said agitator having a diameter of from about 1:3 to 2:3 of the diameter of said vessel and impellers thereon having an effective surface area about the same as the cross-sectional area of said vessel, said reactor and said vessel being connected in a closed system;

b. filling said vessel with a column of said fluid from said reactor to a point near the top of said vessel where there is disposed a return conduit from said vessel to a point near the bottom of said vessel to a point near the bottom of said reactor;

c. introducing an oxygen containing gas into said fluid in said vessel at a point near the bottom of said vessel, at a pressure of from about 1.0 to about 40 psig;

d. revolving said agitator in said fluid in said vessel while said gas is being introduced thereinto;

e. operating said agitator at from about 150 to about 1,800 rpm wherein the energy utilization is from about 5 to about 15 horsepower per 1,000 gallons of said fluid in said vessel;

f. shearing said oxygen containing gas into submillimeter bubbles of the order of from about 10^{-1} to about 10^{-4} centimeters in said fluid; and

g. continuously transferring a stream of the bio-oxidizable fluid containing the sub-millimeter bubbles of oxygen containing gas from said vessel to a point near the bottom of said reactor, said stream being taken from a point near the top of said column of said fluid in said vessel, said transferring being conducted at a rate such that the volume of said fluid in said vessel is renewed every 30 to 240 seconds.

3,968,036

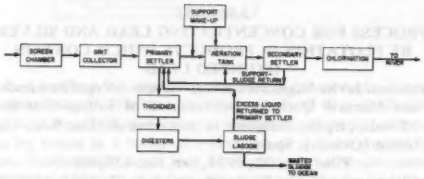
METHOD OF TREATING WASTE WATER

Arthur W. Liles, Murray Hill, and Robert D. Schwartz, East Windsor, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 17, 1974, Ser. No. 480,011

Int. Cl.[2] C02C *1/20*

U.S. Cl. 210—15 2 Claims



1. In a process for biologically treating industrial and municipal waste water containing organic carbon, which comprises the steps of mixing said waste water with an activated sludge at conditions whereby a portion of the organic carbon present in said waste water is biologically oxidized, said conditions including a temperature of from 10° to 60°C, and separating an effluent from said mixture of waste water and activated sludge which is depleted in organic carbon, the improvement which comprises mixing with said activated sludge a catalyst

which has been deactivated in a fluid cracking process, said catalyst comprising V, Fe, Ni, Cu, and C supported on an inorganic oxide selected from the group consisting of alumina, silica, aluminum silicates and mixtures thereof said catalyst being mixed at a ratio of inorganic oxide to activated sludge of from 0.1 to 10 wt. % of said activated sludge whereby said inorganic oxide functions as a nucleation center.

3,968,037

EMULSION POLYMERIZATION OF CATIONIC MONOMERS

Janice Elaine Morgan, Carnegie, and Jerry Emile Boothe, Coraopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 285,888, Sept. 1, 1972, abandoned. This application June 17, 1974, Ser. No. 479,922

Int. Cl.² C02B *1/20*

U.S. Cl. 210—47 **1 Claim**

1. A method of releasing water from activated sewage sludge which comprises steps of adding to the sludge from about 0.1 ppm to about 20 ppm of a cationic polymer prepared by forming an aqueous solution of from about 5% to about 95% by weight dimethyl diallyl ammonium chloride and about 0.005 to about 5 mole %, based on the moles of dimethyl diallyl ammonium chloride of a copolymerizable, polyunsaturated cross-linking monomer selected from the group consisting of methylenebisacrylamide, methyl triallyl ammonium chloride and tetraallyl ammonium chloride, preparing a water-in-oil emulsion of said aqueous solution in a water insoluble liquid containing a surfactant, said water insoluble liquid being about 25% to about 90% by weight of the total emulsion and said surfactant being 0.5 percent to 10 percent by weight of the total emulsion, and heating the emulsion to a temperature sufficient to essentially completely polymerize the monomers in the presence of a free radical polymerization initiator, said free radical polymerization initiator being present in amounts from 10^{-7} to 10^{-1} mole per mole of dimethyl diallyl ammonium chloride, and filtering the sludge-polymer mixture.

3,968,038

APPARATUS FOR TREATING LIQUIDS

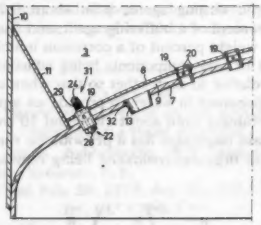
Bengt H. Nilsson, Skoghall, Sweden, assignor to Uddeholms Aktiebolag, Sweden

Filed July 10, 1975, Ser. No. 594,641

Claims priority, application Sweden, July 10, 1974, 7409056

Int. Cl.² B01D *29/38*

U.S. Cl. 210—275 **7 Claims**



1. Apparatus for treating a liquid by causing it to flow downwardly through a bed of particulate material, comprising a tank forming a bed-accommodating chamber therein and having a bed-supporting bottom structure, said bottom structure comprising upper and lower bottom plates having a plurality of opposing openings therein and forming between them a bottom compartment, conduit means communicating with the bottom compartment through the lower bottom plate, and a plurality of sleeves extending between the upper and lower bottom plates in alignment with pairs of opposing openings therein, the lower ends of said sleeves adapted to be closed in operation; axially spaced portions of each sleeve being rigidly joined with respectively the upper and the lower bottom plate, the interior of each sleeve communicating with the bed-accommodating chamber and with the bottom compartment.

3,968,039

FILTER PRESS

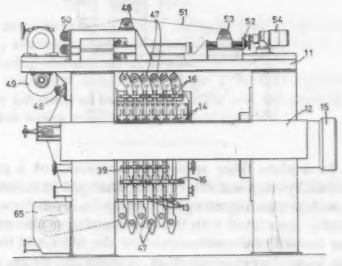
Kazuo Inujima, Sakai; Kiyohiko Tokunaga, Kishiwada, and Yoshiyuki Sotobayashi, Amagasaki, all of Japan, assignors to Kubota Tekko Kabushiki Kaisha (Kubota, Ltd.), Osaka, Japan

Filed Jan. 23, 1975, Ser. No. 543,234

Claims priority, application Japan, Nov. 26, 1974, 49-137336

Int. Cl.² B01D *25/32*

U.S. Cl. 210—225 **3 Claims**



1. A filter press comprising:

a. a longitudinal rectangular frame (11) to each side of which are supports (12) for holding filter plates (13);

b. a plurality of vertically disposed filter plates (13) having a projecting portion (30) with sliding means (14) for free movement along said supports (12);

c. sliding link means (16) at the sides of said filter plates (13) coupling said filter plates for movement towards or away from each other;

d. hydraulic cylinder means horizontally disposed, coupled to said filter plates to push them together or pull them apart;

e. a filtrate recess portion (20) in said filter plates at one surface, with filtrate passages (21) at the bottom, a sealing diaphragm (22) at the other surface, and a hollow (26) in said recess portion (20);

f. a mouthpiece (25) for each of said filter plates for entering said hollow, said mouth piece having a flat fitting portion (27) that fits in said hollow (20), a pipeline portion (66) opposite said projecting portion (30) of the respective filter plate with a corresponding pipeline aperture (32) and, guide means (35, 36) to couple the pipeline portion aperture (32) and the projecting portion apertures (32) so as to form a pipeline when said filter plates are pressed together, a lower projecting portion (41) under the projecting portion (30) with an opening (42), a filtrate conduit (43) leading to said opening (42) from said filtrate passages (21) so that when said openings (42) are pressed together a discharge line is formed and the filtrate can be discharged from one end of the line;

g. pressure water feed means (46) coupled to said filter plates (13) to feed water under pressure to said diaphragm; and,

h. roller means for passing an endless filter cloth (51) along a travel path over and under said filter plates (13), with filter cloth cleaning means (65) along said travel path.

3,968,040
PLATE FILTER WITH HORIZONTALLY ARRANGED BILATERALLY ACTING FILTERS

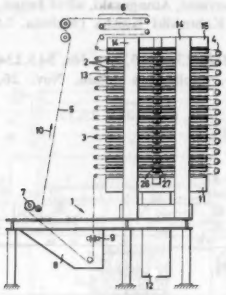
Ernst Ostrop, Stockheim, Germany, assignor to Eberhard Hoesch & Söhne, Duren, Germany

Filed May 6, 1975, Ser. No. 574,909

Claims priority, application Germany, May 6, 1974, 2421781

Int. Cl.² B01D *25/12*

U.S. Cl. 210—225 **11 Claims**



1. In a plate filter apparatus composed of a plurality of horizontally disposed filter plates arranged in a vertical stack and each presenting an upper face and a lower face, a locking assembly associated with the plates and operable to press the plates toward one another to close the filter and to move the plates away from one another to open the filter, an endless filter cloth band, and a plurality of guide rollers around which the band passes, the rollers being arranged in a manner such that the band passes between adjacent filter plates, each filter plate defining a liquid tight partition located between its faces and provided with channels for the discharge of liquids, and each plate being provided with rim portions projecting vertically at both plate faces to define sealing surfaces, the improvement wherein: each said filter plate is provided at each of its said faces with fluid flow channels communicating with said channels for the discharge of liquids; said apparatus comprises a plurality of frame members each disposed between a respective pair of adjacent filter plates and each constituted by a rim surrounding a hollow region and formed to coincide with the rim portions of said plates which are directed toward said frame member, the rim of each said frame member and said pair of filter plates adjacent thereto defining a filter chamber when said plates are pressed toward one another; and said filter cloth band extends along a path which passes between each filter plate face and the respective adjacent frame member.

3,968,041
APPARATUS FOR COLLECTING OIL SLICK FROM A BODY OF WATER

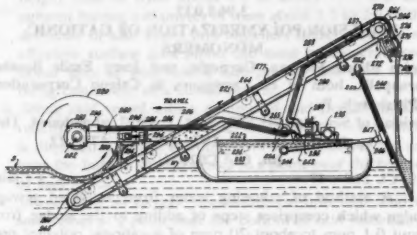
Edwin A. De Voss, 1363 Clarence Drive, Vista, Calif. 92083

Continuation-in-part of Ser. No. 128,766, March 29, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,348

Int. Cl.² E02B *15/04*

U.S. Cl. 210—242 S **19 Claims**

1. In an apparatus for removing oil from a body of water while moving along the water in a forward direction of motion: a conveyor having a surface to which oil tends removably to adhere, said surface being contactible with the top of a slick of oil to be removed while the slick is on the surface of the body of water, and movable rearwardly of the said forward direction and upwardly relative to the water; a secondary conveyor formed as a belt having a lower loop beneath the surface of the water, and a length disposed rearwardly of the first-named conveyor, and extending rearwardly and upwardly, whereby to form at the elevation of the oil atop the water an initially wedge-shaped path into which the oil slick tends to be drawn as a consequence of movement of the



conveyors relative to one another, the first-named conveyor comprising a drum having a substantial portion of its periphery forming a downwardly-facing region so disposed and arranged as to contact the top of the oil slick.

3,968,042
FINISHING AGENT AND NONSCROOPY POLYOLEFIN FIBERS

Wayne K. Erickson, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

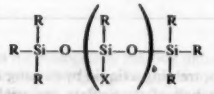
Filed Sept. 13, 1974, Ser. No. 505,916

Int. Cl.² D06M *13/18, 13/46*

U.S. Cl. 252—8.9 **7 Claims**

1. A two-component finishing agent composition comprising:

on a dry solids basis, from about 60 to about 80 weight percent of a first component and from about 20 to about 40 weight percent of a second component wherein said first component comprises an organopolysiloxane and said second component comprises from about 86 to about 98 weight percent of a quaternary ammonium salt surface-active material having softening properties for polyolefin fibers; from about 0.3 to about 2 weight percent of a nonionic wetting agent; from about 0.7 to about 4 weight percent of a buffering agent; and from about 1 to about 8 weight percent of a corrosion inhibitor; with the amounts of said components being adjusted within said ranges relative to each other so that when said composition is dispersed in water to provide an aqueous dispersion containing from about 1to about 20 weight percent solids, said dispersion has a pH with the range of from 6 to 8, said organopolysiloxane being represented by the formula



wherein each R is individually selected from the group consisting of alkyls having from 1 to 6 carbon atoms, each x is individually selected from the group consisting of R and $+CH_2C-H_2O+CH$ with from 10 to 90 percent of the x's being R, b is an integer having a value of at least 10, and c is an integer having a value of at least 20.

3,968,043

METHOD OF PREPARATION OF MATERIAL FOR LUBRICATION OF EXTERNAL SURFACE OF DRILLING PIPE

Vladimir Sergeevich Shavyrin, Ploschad Svobody, 4, kv. 18; Vyacheslav Nikolaevich Gusakov, ul. Kuibysheva, 23, kv. 3, both of Gorky; Klavdia Vasilievna Pankova, ul. Tsiolkovskogo 1a, kv. 50, Volgograd; Nina Petrovna Polyakova, Ploschad Svobody, 4, kv. 116; Natalya Petrovna Shirkaeva, ul. Svetloyarskaya, 75, kv. 5, both of Gorky; Valentin Nikolaevich Gorin, ul. Basseinaya, 53, kv. 1; Oleg Semenovich Goyovin, ul. Mikhailova, 8, kv. 29, both of Leningrad, all of U.S.S.R.; Alexei Egorovich Mastjukova, deceased, late of Gorky, U.S.S.R., and by Maria Pavlovna Mastjukova, heir at law, Ploschad Svobody, 4, kv. 67, Gorky, U.S.S.R.

Continuation of Ser. No. 472,866, May 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 268,894, July 3, 1972, abandoned. This application May 13, 1975, Ser. No. 576,959

Int. Cl.² C10M *1/24*

U.S. Cl. 252—56 R **1 Claim**

1. A method of preparing a lubricant for lubrication of the external surface of a drilling pipe comprising the following steps: preparing a mixture consisting essentially of 55–75% by weight of transmission lubricating oil obtained as a petroleum rectification product, with a congealing temperature of not higher than − 20°C; a relative viscosity at 100°C of from 18.7 to 22 centistokes and an open cup flash point of at least 170°C, 5–10% by weight of petroleum paraffins with a melting point of at least 50°C, 15–35% by weight of tall oil pitch and, optionally, bitumen obtained as a result of oxidation of petroleum distillation residues with a melting point of at least 90°C, a solubility in chloroform and benzene of at least 99 percent by weight and a flash point of at least 230°C; primary heating said mixture to 100°C with subsequent holding of said mixture at this temperature for 20 minutes while stirring to obtain a homogeneous mass; and secondary heating said mixture to 300°C with subsequent holding of the mixture at this temperature for one hour to obtain the final lubricant product.

3,968,044

MILLED LIQUID DEVELOPER

Yasuo Tamai, and Hajime Miyatuka, both of Tokyo, Japan, assignors to Rank Xerox Ltd., London, England

Filed Feb. 1, 1974, Ser. No. 438,896

Int. Cl.² G03G *9/03*

U.S. Cl. 252—62.1 L **7 Claims**

1. A liquid developer for forming visible images on the surface of a latent image bearing member comprising a milled dispersion of about one gram graft pigment and from about 0.1 to about 100 grams alkyd resin which is soluble in the developer carrier, said dispersion being homogeneously dispersed in about one liter of an electrically insulating carrier liquid.

3,968,045

ALKALINITY REDUCTION IN AN ABSORPTION REFRIGERATION SYSTEM

Howard W. Sibley, Baldwinsville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 28, 1975, Ser. No. 553,956

Int. Cl.² C09K *5/00*

U.S. Cl. 252—68 **14 Claims**

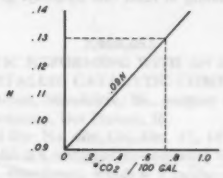
1. The method of reducing the alkaline normality of a lithium bromide solution containing lithium hydroxide including the steps of

introducing carbon dioxide into the solution whereby the carbon dioxide reacts with lithium hydroxide to adjust the normality of the solution,

metering the flow rate of the carbon dioxide as it is introduced into the solution whereby the reaction rate is regulated to minimize loss of free carbon dioxide from the solution, and

controlling the amount of carbon dioxide introduced into the solution to bring the normality of the solution to a predetermined range.

5. An absorbent solution for a refrigeration system comprising an aqueous solution containing lithium bromide, a primary inhibitor of lithium hydroxide and a carbonate formed by a reaction of carbon dioxide with the primary inhibitor to maintain the normality of the solution at a predetermined level.



7. An absorbent solution of claim 5 further including a secondary inhibitor of lithium nitrate and the normality of the solution being maintained at about 0.09N.

8. An absorbent solution of claim 5 further including a secondary inhibitor of lithium chromate and the normality of the solution being maintained at about 0.005N.

3,968,046

POLYPHOSPHATE FREE DETERGENT COMPOSITIONS

Fred Smeets, Tienen, Belgium, assignor to Citrex, Societe Anonyme, Brussels, Belgium

Filed Feb. 28, 1974, Ser. No. 447,037

Claims priority, application United Kingdom, Mar. 1, 1973, 9936/73

Int. Cl.² C11D *3/395, 7/54*

U.S. Cl. 252—95 **24 Claims**

1. A phosphate-free detergent composition which comprises

a. 1 to 30 parts by weight of a sodium, potassium, ammonium or triethanolamine salt of an organic polycarboxylic acid selected from the group consisting of

1. the unsaturated tetracarboxylic acid which is the pyrolysis product prepared by heating an alkaline-earth metal salt of citric acid to a temperature within the range of 250° to 400°C for a period of time until an increase in titratable alkalinity of the reaction mixture is obtained and until not more than 32% by weight of the original citric acid salt remains in the reaction mixture, and

2. the sulfotetracarboxylic acid obtained by sulfonating the said unsaturated tetracarboxylic acid, and

b. 99 to 70 parts by weight of an alkali metal sulfate selected from the group consisting of sodium sulfate and potassium sulfate.

3,968,047

DETERGENT COMPOSITIONS

Fred Smeets, Tiennen, Belgium, assignor to Citrex, Societe Anonyme, Brussels, Belgium

Filed Feb. 28, 1974, Ser. No. 447,039

Claims priority, application United Kingdom, Mar. 1, 1973, 9937/73

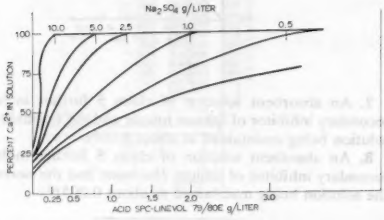
Int. Cl.² C11D *3/395, 7/54*

U.S. Cl. 252—95 **24 Claims**

1. A phosphate-free detergent composition, which comprises:

a. 1 to 30 parts by weight of a salt of an organic sulfopolycarboxylic acid, the carboxyl groups of which are at least partially esterified with at least one non-ionic compound containing at least one hydroxyl group and the sulfonic acid group of which is salified with a cation

selected from the group consisting of sodium, potassium and triethanolamine, said sulfopolycarboxylic acid being obtained by sulfonating and acidifying the pyrolysis product prepared by heating an alkaline-earth metal salt of citric acid to a temperature within the range of 250° to 400°C for a period of time until an increase in titratable alkalinity of the reaction mixture is obtained and until not more than 32% by weight of the original citric acid salt remains in the reaction mixture, said non-ionic compound containing at least one hydroxyl group being selected from the group consisting of aliphatic alcohols containing from 4 to 24 carbon atoms alkoxylated with from 1 to 50 moles of a C_2–C_3 alkylene oxide per mole of aliphatic alcohol and alkylphenols containing from 8 to 15 carbon atoms in the alkyl chain alkoxylated with from 1 to 50 moles of a C_2–C_3 alkylene oxide per mole of alkylphenol, and



b. 99 to 70 parts by weight of an alkali metal sulfate selected from the group consisting of sodium sulfate and potassium sulfate.

3,968,048

DRAIN CLEANING COMPOSITIONS

Joseph A. Bolan, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Filed Feb. 14, 1975, Ser. No. 550,057
Int. Cl.² C11D 7/06
U.S. Cl. 252—157 **4 Claims**

1. A granular drain cleaning composition consisting essentially of Parts A and B which are physically separated until utilization in the presence of water wherein:

a. Part A consists essentially of 20 to 40 parts by weight of an alkali metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide; and

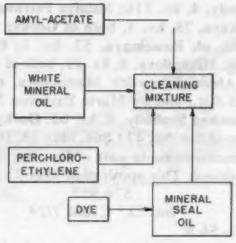
b. Part B consists essentially of a mixture containing one or more ingredients that are chemically incompatible in the dry state with said alkali, said mixture comprising 10 to 40 parts by weight of an acidic agent selected from the group consisting of sodium bisulfate and citric acid, and 1 to 10 parts by weight of an oxidizing agent selected from the group consisting of sodium carbonate peroxide, sodium perborate monohydrate and monopotassium peroxymonosulfate.

3,968,049

SOLVENT CLEANING COMPOSITION

Eugene C. Lockett, 1580 Stewart St., Reno, Nev. 89502

Filed Oct. 4, 1973, Ser. No. 403,398
Int. Cl.² B08B 1/00; C11D 7/30
U.S. Cl. 252—171 **8 Claims**



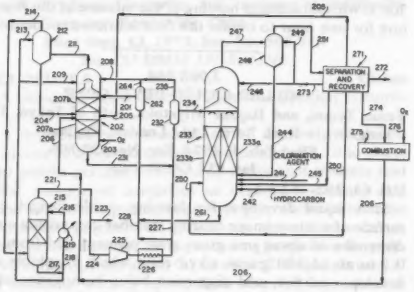
7. A composition for treating dust cloths comprising a mixture by volume 35% Perchloroethylene, 35% Mineral Seal Oil, and 30% ice machine oil, a dye added thereto, and 1 to 3 ounces of amyl acetate per gallon of said mixture.

3,968,050

OXIDATION OF MOLTEN SALTS AND RECOVERY OF CHLORINE VALUES

Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Mar. 12, 1974, Ser. No. 450,456
Int. Cl.² C01B 9/02; C07C 17/00, 21/06
U.S. Cl. 252—187 R **6 Claims**



1. In the process for oxidizing a molten salt and recovering chlorine values wherein a molten salt mixture containing a multivalent metal chloride in its higher and lower valence state is contacted in a reaction zone with chlorine values selected for the group consisting of chlorine, hydrogen chloride and mixtures thereof to recover the chlorine values by generation of the higher valent chloride and is also contacted with molecular oxygen to produce the oxychloride of the multivalent metal, said multivalent metal chloride being selected from the group consisting of the chlorides of copper, chromium, manganese, iron and cobalt, said reaction zone being operated at a temperature from about 600° to about 1000°F, the improvement comprising:

introducing the molten mixture into an upper portion of said reaction zone;

introducing the chlorine values into an intermediate portion of said reaction zone;

introducing molecular oxygen into a lower portion of said reaction zone, passing the molten mixture through said reaction zone in countercurrent contact with said chlo-

rine values and molecular oxygen to recover the chlorine values and produce oxychloride; and

recovering molten salt from said reaction zone having an increased content of the higher valent metal chloride and containing the oxychloride of the multivalent metal.

3,968,051

FREEZE DRYING PHOTOCHROMIC FILTERS

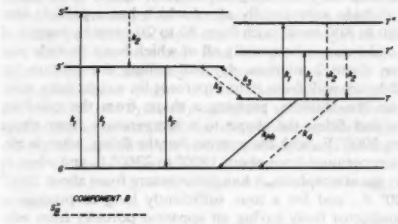
Robert Franz Stamm; Jacob Solomon Brinen, both of Stamford; Evalyn Hosterman Tennant, Old Greenwich, and Frederick Halverson, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 769,028, Oct. 21, 1968, Pat. No. 3,635,544, which is a continuation-in-part of Ser. No. 332,752, Dec. 23, 1963, abandoned. This application July 14, 1971, Ser. No. 162,465

The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed.

Int. Cl.[2] G02C 7/10; G02B 5/28; F21V 9/00

U.S. Cl. 252—300 3 Claims



1. A method of making a photochromic plastic article comprising the steps of dissolving transparent polymerized synthetic vinyl resin together with a small but effective amount of organic polyaromatic photochromic material in a solvent, freezing the solution produced thereby, vaporizing all of said solvent without melting the residual solid solute materials, and compression molding said solid residue under sufficient elevated temperatures and pressures to fuse the same into an optically clear plastic article displaying reversible photochromic properties when subjected to sunlight.

3,968,052

SYNTHESIS GAS MANUFACTURE

Leonard Seglin, New York, N.Y., and Ralph Tracy Eddinger, Princeton Junction, N.J., assignors to Cogas Development Company, Princeton, N.J.

Continuation-in-part of Ser. No. 114,642, Feb. 11, 1971, Pat. No. 3,850,839. This application May 30, 1974, Ser. No. 474,417

The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.

Int. Cl.[2] C10J 3/46; C10F 3/54

U.S. Cl. 252—373 4 Claims

1. In the process of making synthesis gas by the gasification of a solid consisting primarily of carbon with steam in a fluidized-bed gasification zone which is connected to a dust recovery zone, in which the heat for the process is provided by a recirculating stream of recycle solids which are heated by the combustion of the carbon-containing fines collected from the dust recovery zone of the fluidized-bed gasification zone, the improvement which comprises using as the recycle solids inert, refractory pellets which are not fluidized in the gasification zone, passing a hot stream of said pellets through said gasification zone to provide the heat for the gasification reaction, withdrawing said stream, separating entrained carbon from the pellets and returning said separated carbon to the gasification zone charging the separated pellets into a heating zone along with the carbon-containing fines and enough oxidizing gas to burn the carbon-containing fines, maintaining the pellets in the heating zone for a time sufficient to raise their temperature to a point where they provide the heat of reaction in the gasifier, and recirculating the heated pellets back to the gasifier.

3,968,053

CATALYTIC REFORMING WITH AN ACTIVATED BIMETALLIC CATALYTIC COMPOSITE

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 406,134, Oct. 12, 1973, Pat. No. 3,864,241, which is a continuation-in-part of Ser. No. 187,579, Oct. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application June 21, 1974, Ser. No. 482,708

The portion of the term of this patent subsequent to Nov. 7, 1989, has been disclaimed.

Int. Cl.[2] B01J 27/04, 27/08, 27/10

U.S. Cl. 252—439 6 Claims

1. An activated catalytic composite comprising a combination of platinum group metal in the elemental state, tin and halogen with a porous carrier material in amounts sufficient to result in a catalyst containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen, said tin component being uniformly dispersed throughout the porous carrier material in a particle size less than 100 angstroms in maximum dimension and in a positive oxidation state the catalytic composite having been activated by contacting with an activating gas comprising oxygen and a halogenating component selected from the group consisting of halogen and hydrogen halide at a temperature between 700 to 1100°F. for a time of at least 0.5 to about 10 hours followed by reduction of said activated catalyst with a substantially water-free reduction agent to reduce substantially all of the platinum to the metallic state while maintaining substantially all of the tin component in an oxidation state above the elemental metal.

3. An activated catalytic composite as defined in claim 1 wherein the tin component is tin oxide or tin sulfide.

3,968,054

CATALYST FOR THE OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Wesley E. Cherry, Prospect Park; Alan F. Dickason, Chester, both of Pa., and John A. Hedge, Wilmington, Del., assignors to Sun Ventures, Inc., St. Davids, Pa.

Division of Ser. No. 407,340, Oct. 17, 1973, Pat. No. 3,928,392. This application Apr. 21, 1975, Ser. No. 570,289

Int. Cl.[2] B01J 23/06, 23/28, 23/84

U.S. Cl. 252—468 2 Claims

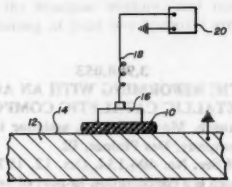
1. A process for preparing a catalyst composition useful for the vapor phase oxidation of butane to maleic anhydride which comprises dissolving an antimony salt in water, adjusting the pH of the solution to about 6.5 to precipitate said salt, adding to said precipitate an aqueous solution of a mixture of a molybdenum salt and a salt of nickel, cobalt, copper or zinc, drying the resulting composition at about 110° to 130°C and crushing it to small particle size, and thereafter calcining the particles at a temperature of from about 750° to 850°C for at least about 2 hours.

3,968,055

METHOD OF PREPARING CONDUCTIVE ROOM TEMPERATURE VULCANIZING MATERIAL

David Nelson Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 25, 1974, Ser. No. 517,983
Int. Cl.² H01B 1/08
U.S. Cl. 252—506 2 Claims



1. A method of preparing an electrically conductive room temperature vulcanizing material which is stable in the absence of moisture but which will cure open exposure to moisture which comprises the steps of:

a. mixing in the absence of moisture (1) 100 parts by weight of a matrix material selected from the group consisting of vinylmethyl siloxane and polyphenyl siloxane, (2) from 10 to 25 parts by weight of an iron oxide filler-binder, (3) from 0.1 to 5.0 parts by weight catalyst cross-linking agent selected from the group consisting of acetic anhydride, dibutyl tin dilaurate and tin octoate to permit cross-linking of said matrix material upon exposure to moisture, and (4) a first quantity of a temporary dispersing agent selected from the group consisting of cyclohexane, cyclobutane, cyclopentane, cycloheptane and cyclopentanone;

b. mixing from 50 to 100 parts by weight of a finely divided conductive material with a second quantity of said temporary dispersing agent, said conductive material being selected from the group consisting of palladium and graphite; the total of said first and second quantity of temporary dispersing agent being from 1000 to 1550 parts by weight;

c. mixing in the absence of moisture said mixtures from steps a. and b.; and

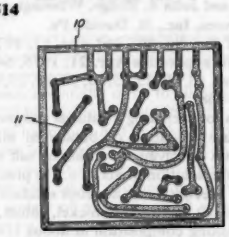
d. evaporating said temporary dispersing agent from said mixture whereby said conductive material is homogeneously dispersed in said room temperature vulcanizing material.

3,968,056

RADIATION CURABLE INKS

Donald A. Bolon, Scotia; Gary M. Lucas, Schenectady, both of N.Y., and Ralph L. Bartholomew, Painesville, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 27, 1974, Ser. No. 509,822
Int. Cl.² H01B 1/02
U.S. Cl. 252—514 15 Claims



1. A screen printable radiation curable ink convertible to an abrasion resistant conductive coating exhibiting a specific resistivity of less than 10 ohm-cm when cured on the surface of a substrate consisting essentially of by volume

A. from about 10 to 60 percent of a radiation curable organic resin binder having a viscosity of from about 50 to 10,000 centipoises at 25°C., and

B. from about 90 to 40 percent of an electrically conductive filler consisting essentially of silver or copper containing particles with about 0 percent to about 15 percent by weight of silver or copper containing particles having an aspect ratio of diameter to thickness of a value greater than 20 based on the total weight of conductive filler.

3,968,057

METHOD FOR PRODUCING A SEMI-CONDUCTOR BODY

Francis H. Dulin, Oakland Township, Oakland County, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Oct. 25, 1974, Ser. No. 517,945
Int. Cl.² H01B 1/04
U.S. Cl. 252—516 9 Claims

1. A method for producing a semi-conductor body which consists essentially of mixing from 20 to 80 parts by weight of silicon carbide substantially all of which has a particle size from 150 to 800 mesh, with from 80 to 20 parts by weight of reactive alumina, substantially all of which has a particle size less than about 2 microns, dry ball milling the mixture for about 2 hours with from ½ to 2 percent by weight fatty acid, based on the alumina, pressing a shape from the resulting mixture and firing the shape to a temperature from about 1900° to 3000° F., with the proviso that the firing, when in air, is to a temperature from about 1900° to 2300° F. and when in an inert gas atmosphere, is to a temperature from about 2000° to 3000° F., and for a time sufficiently long to produce a semi-conductor body having an apparent porosity from substantially 10 to 25 percent.

3,968,058

FREE FLOWING NONIONIC INCLUSION COMPOUNDS

Bao-Ding Cheng, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 114,675, Feb. 11, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 409,899
Int. Cl.² C11D 3/08, 3/32
U.S. Cl. 252—544 4 Claims

1. The method of forming a free flowing particulate blend of urea and a liquid ethoxylated long carbon chain alcohol having an alkyl chain of from about 12 to about 18 carbon atoms and an average of about 10 to about 19 ethylene oxide units, comprising the steps of

a. preparing a slurry of particulate urea having a particle size less than 74 microns and methanol

b. said slurry consisting essentially of from about 80 to 90% urea and from about 10 to about 20% methanol, by weight

c. mixing said slurry with said liquid ethoxylated alcohol, in a weight ratio of alcohol to urea of at least 3:2

d. evaporating substantially all of said methanol from the mixture of said slurry and said ethoxylated alcohol, and

e. adding microsized silica particles to said slurry ethoxylated alcohol mixture prior to said evaporating step.

4. A free flowing particulate material, comprising

a. an inclusion compound of urea and liquid nonionic surfactant chosen from the group consisting of ethoxylated alcohols having an alkyl chain of from about 12 to about 18 carbon atoms and an average of about 10 to about 19 ethylene oxide units,

b. from about 1% to about 5% by weight of microsized silica particles chosen from the group consisting of pyrogenic silicon dioxide and sponge-like silica gel.

c. said inclusion compound including a finite amount of methanol not exceeding 1% by weight,

d. said inclusion compound including at least about 60% by weight of said ethoxylated alcohol.

3,968,059

PROCESS FOR PRODUCING METHYL METHACRYLATE POLYMERS

Kazushi Shimada; Toru Maeda; Tamotu Nishizawa, all of Otake; Yositaka Sasaki, Tokyo; Takehiko Narisada, and Hisao Anzai, both of Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1975, Ser. No. 546,883
Claims priority, application Japan, Feb. 4, 1974, 49-14262
Int. Cl.² C08F 2/02, 6/28, 20/14, 20/18
U.S. Cl. 526—68 11 Claims

1. An improvement in the process of producing a methyl methacrylate polymer or a copolymer, said methyl methacrylate polymer or copolymer comprising at least 80% by weight of units derived from methyl methacrylate and at most 20% by weight of units derived from a copolymerizable ethylenically unsaturated compound, by a bulk polymerization procedure wherein the monomer or monomers are polymerized at temperatures of 150° to 180°C with a conversion of 50 to 80% in a polymerization zone and the polymerizaton mixture withdrawn from the polymerizaton zone is introduced into a separation zone where volatiles predominantly comprised of an unreacted monomer or monomers are separated from the polymer product, said separated volatiles being cyclically used as a part of the monomer feed for the polymerization, said improvement comprising substantially removing polymers having molecular weights of 186 to approximately 1,000 from the volatiles and cyclically using the volatiles so treated as a part of the monomer feed for the polymerization while maintaining the content in the volatiles of impurities having boiling points of lower than 200°C at normal pressure within the range from 5 to 20% by weight based on the weight of the volatiles.

3,968,060

ENCAPSULATED FLAME RETARDANT SYSTEM

David N. Vincent, Glenview, and Ronald Golden, Mount Prospect, both of Ill., assignors to Champion International Corporation, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,523
Int. Cl.² C08K 9/10; C08J 9/00; C08G 18/14
U.S. Cl. 260—2.5 AJ 16 Claims

1. A self-extinguishing composition comprising a foamed plastic containing microcapsules in the cell walls thereof, said microcapsules having substantially spherical, solid, polymeric walls surrounding a substantially spherical core consisting essentially of a flame retardant material, said microcapsules having an average particle diameter of below about 5 microns.

2. The self-extinguishing article of claim 1 wherein said plastic foam is a polyurethane foam.

3,968,061

POLYURETHANE FOAMS PREPARED BY A QUASI-PREPOLYMER TECHNIQUE

Charles Frederick Cardy, Luton, and Stephen Arthur Lee, Dunstable, both of England, assignors to Interox Chemicals Limited, London, England

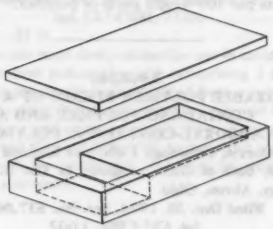
Filed Dec. 30, 1974, Ser. No. 537,347
Claims priority, application United Kingdom, Jan. 11, 1974, 1351/74
Int. Cl.² C08G 18/14, 18/12
U.S. Cl. 260—2.5 AN 10 Claims

1. A method of preparing a polyurethane foam by a quasi-prepolymerization technique which comprises the steps of:

a. forming a first copolymer having an —OH number in the range of from 38 to 75 mg KOH/g from an ε-caprolactone, an epoxide and a mixture of a dihydric alcohol and a trihydric alcohol, said copolymer having an average —OH-functionality greater than 2.00 but less than 3.00;

b. reacting said first copolymer with a polyisocyanate to form an isocyanate terminated prepolymer;

c. preparing a reactant mixture comprising: a chain extender, which is a diol having a molecular weight below 140, dissolved in: a second copolymer having an —OH number in the range of from 38 to 75 mg KOH/g formed by reaction of an ε-caprolactone, an epoxide, a dihydric alcohol



and sufficient trihydric alcohol that the said copolymer has an —OH-functionality in the range of 2.0 to 2.20, and

d. reacting said prepolymer with said reactant mixture in the presence of a blowing agent and a catalyst.

3,968,062

USE OF PARA-TERT. BUTYL PHENOL DISULFIDE FOR VULCANIZING CHLOROBUTYL RUBBER COMPOSITIONS

Robert N. Ecsedy, Newtown, Conn., assignor to Fairfield Chemical Services, Westport, Conn.

Filed Aug. 23, 1974, Ser. No. 499,886
Int. Cl.² C08L 7/00, 9/00, 23/22
U.S. Cl. 260—5 6 Claims

1. A method of vulcanizing blends of chlorobutyl rubber with at least one other highly unsaturated elastomer capable of producing a co-vulcanizate with chlorobutyl rubber which comprises mixing said chlorobutyl rubber blends with a vulcanizing agent comprising a friable resinous para-tert-butyl. phenol disulfide containing 27 – 29 percent sulfur and vulcanizing the resultant mixture.

3,968,063

METHOD OF TREATING SYNTHETIC POLYMER LATEX OF STYRENE-BUTADIENE OR POLYISOPRENE TO MAKE SOLID POLYMER DERIVED THEREFROM RE-DISPERSIBLE TO A LATEX

Chin Peng Sung, Kuala Lumpur, Malaysia, assignor to The Board of the Rubber Research Institute of Malaysia, Malaysia

Division of Ser. No. 390,246, Aug. 21, 1973, Pat. No. 3,904,567. This application June 20, 1975, Ser. No. 588,950
Int. Cl.² C08C 4/00; C08L 5/00, 7/02, 9/00
U.S. Cl. 260—17.4 SG 14 Claims

1. A method of making a solid or pasty redispersible styrene-butadiene rubber which method comprises adding at least 0.05% by weight on the weight of the dry rubber of a polyhydric alcohol or a mono- or di-saccharide as a redispersing agent to a styrene-butadiene rubber latex and removing water from the latex.

3,968,064

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer Douglas Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 15, 1976, Ser. No. 649,501
Int. Cl.² C08J 3/20
U.S. Cl. 260—23 XA 23 Claims

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$, NiO, Ni_2Si, and nickel stearate and (B) at least one

vanadium compound selected from the group consisting of NH_4VO_3, $Mg(VO_3)_2$, $NaVO_3$, $VOSO_4$, V_2O_5, and vanadium oxyacetylacetonate, said compounds (A) and (B) being compounds or hydrates thereof, and said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

3,968,065

VULCANIZABLE POLYMER BLENDS OF A HALOGEN-CONTAINING POLYMER AND A CARBOXYL-CONTAINING POLYMER

Roger E. Morris, Cuyahoga Falls, and Richard H. Backderf, Richfield, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1974, Ser. No. 537,062
Int. Cl.² C08L *33/02*
U.S. Cl. 260—23.5 R **22 Claims**

1. A vulcanizable polymer blend comprising (1) from about 1 part to about 99 parts by weight of a halogen-containing polymer per 100 parts by weight of the halogen-containing and carboxyl-containing polymers, (2) from about 1 part to about 99 parts by weight of a carboxyl-containing polymer per 100 parts by weight of the halogen-containing and carboxyl-containing polymers, and (3) a cure system consisting essentially of (A) from about 0.5 part to about 20 parts by weight of a metal oxy compound selected from the group consisting of (a) a metal salt of an organic acid and (b) a non-alkali metal oxide, hydroxide, or carbonate, and (B) from about 0.1 part to about 10 parts by weight of either a quaternary ammonium salt or a monofunctional tertiary amine, said parts by weight of the cure system based on 100 parts by weight of the halogen-containing and carboxyl-containing polymers.

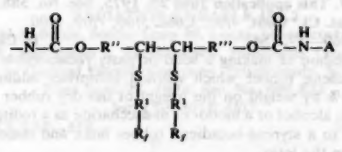
3,968,066

OIL AND WATER REPELLENT TEXTILE COMPOSITION CONTAINING A FLUOROCHEMICAL POLYURETHANE RESIN AND A QUATERNARY AMMONIUM SALT

Karl Friedrich Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,169
Int. Cl.² C08L *75/04*
U.S. Cl. 260—29.2 TN **6 Claims**

1. A composition comprising a fluorochemical polyurethane textile resin and from about 3 to about 100%, based on the weight of resin, of a quaternary ammonium salt containing at least one long hydrocarbon chain, wherein the fluorochemical polyurethane textile resin is of the formula



where

R_f is perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

R^1 is straight or branched chain alkylene of 1 to 12 carbon atoms, or alkylenethioalkylene, alkyleneoxyalkylene of alkyleneiminoalkylene of 2 to 12 carbon atoms;

R'' and R''' each independently is straight or branched chain alkylene of 1 to 12 carbon atoms or

$$C_mH_{2m}(OC_kH_{2k})_r$$

where

m is 1 to 12,

k is 2 to 6,

r is 1 to 40, and

A is the divalent residue of an organic diisocyanate.

3,968,067

PROCESS FOR PREPARING HIGH POLYMER LATICES FROM ORGANIC SOLVENT DISPERSIONS

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, Pat. No. 3,879,327, which is a continuation-in-part of Ser. No. 817,494, April 18, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, Ser. No. 691,823, Dec. 16, 1967, abandoned, Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, and Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,644,263. This application June 28, 1974, Ser. No. 484,340
Int. Cl.² C08L *7/02, 23/00*
U.S. Cl. 260—29.6 R **13 Claims**

1. In the formation of a latex from an organic solvent dispersion of a composition of an organic solvent soluble or dispersible, water insoluble, macromolecular polymer or resin by a process of the type which comprises:

1. providing a dispersion of the said composition in essentially water-immiscible volatile physical solvent which itself or as an azeotrope with water has a boiling point lower than that of water at atmospheric pressure,
2. adding water and emulsifier to said dispersion in proportions to form an emulsion having water as its continuum and emulsifying the same so that the discontinuous phase thereof is in particles at least principally of precursor latex particle size,
3. stripping the solvent from the emulsion to form a latex, and
4. recovering the latex product, and which comprises the particular steps of:
5. providing a moving flow of gas comprising steam as an initial continuous phase,
6. dispersing the said emulsion into the flow of gas comprising steam as the initial continuous phase while subjecting the phases to a decrease of pressure and maintaining the temperature thereof below the limiting temperature for stability of the emulsion of particles of precursor latex particle size, thereby vaporizing solvent from the dispersed droplets and forming latex and vapors,
7. establishing a separating zone maintained at a lower pressure, and establishing a flow of latex and water vapor into said separating zone,
8. introducing into said separating zone the latex droplets and vapor produced by step (6) and impinging said droplets upon the flow of latex therein,
9. withdrawing from said separating zone vapors therein resulting from steps 7 and 8, and
10. withdrawing latex from said separating zone, the improvement which consists in the combination in the process of the further steps of:
11. cooling and condensing the vapors withdrawn in step (9) to form a mixture of (a) said solvent in liquid form and (b) water containing some solvent,
12. effecting separation of the liquid solvent (a) from said solvent-containing water (b),
13. vaporizing a quantity of said solvent-containing water (b) sufficient to form at least a substantial part of the flow of gas comprising steam required by step (5), and
14. providing the flow of gas in step (5) at least in substantial part from the flow of gas formed in step (13).

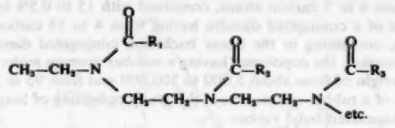
3,968,068

GLASS SIZING

William N. Haggerty, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 7, 1974, Ser. No. 477,246
Int. Cl.² C03C 25/02; C08L 31/04
U.S. Cl. 260—29.6 RB 15 Claims

1. At least one glass filament, at least a portion of the surface of said filament being in contact with the residue produced by evaporting water from an aqueous composition consisting essentially of a non-plasticized vinyl acetate copolymer emulsion, a polyvinyl acetate homopolymer, a vinyl-tri(-beta-methoxyethoxy)silane, a methacrylatochromic chloride, a amide and water said amide having the formula



wherein R_1, R_2 and R_3, represent a mixture of fatty acid chain lengths.

3,968,069

POSITIVELY CHARGED AQUEOUS DISPERSIONS OF POLYTETRAFLUOROETHYLENE AND METHOD FOR PREPARING THE SAME

Edouard Grimaud, Saint-Geis-Laval, and Claude Tournut, Francheville, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 225,305, Feb. 10, 1972, abandoned. This application Sept. 11, 1974, Ser. No. 505,066
Claims priority, application France, Feb. 19, 1971, 71.05713
Int. Cl.² C08L 27/18
U.S. Cl. 260—29.6 F 10 Claims

1. A composition consisting essentially of a positively charged aqueous dispersion of solid polytetrafluoroethylene, anionic emulsifier and cationic emulsifier; said cationic emulsifier being present in a molar ratio to the anionic emulsifier that is substantially greater than 1:1.

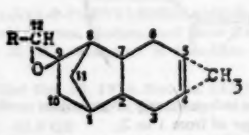
3,968,070

CYCLOALIPHATIC COMPOUNDS AS ODOR- AND TASTE-MODIFYING AGENTS

Erling Sundt, Pinchat-Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Continuation of Ser. No. 292,723, Sept. 27, 1972. This application Dec. 2, 1974, Ser. No. 528,729
Claims priority, application Switzerland, Oct. 11, 1971, 14784/71; May 19, 1972, 7456/72
Int. Cl.² C07D 303/06
U.S. Cl. 260—348 R 4 Claims

1. Compounds of formula



I (bg)

wherein a methyl group is bound to a carbon atom in position 4 or 5, as indicated by the dotted lines, and the symbol R represents a hydrogen atom or an alkyl radical comprising from 1 to 6 carbon atoms.

3,968,071

POLYAMIDE RESIN MOLDING COMPOSITION

Akira Miyamoto; Mitsuyasu Nagano, and Kiyoshi Morishige, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 20, 1975, Ser. No. 633,847
Int. Cl.² C08L 77/06
U.S. Cl. 260—37 N 6 Claims

1. A polyamide resin composition for use in molding, which comprises a mixed polyamide resin comprising 3 to 97 parts by weight of a polyamide resin obtained from a xylylenediamine and an α,ω-straight chain aliphatic dibasic acid having 6 to 12 carbon atoms and correspondingly 97 to 3 parts by weight of nylon 66, and blended therewith, a glass fiber in amount of 10 to 100 parts by weight per 100 parts by weight of said mixed polyamide resin.

3,968,072

ASBESTOS FIBER AND ORGANIC POLYMERIC BINDER HEAT REACTION PRODUCTS AND METHOD OF FORMING SAME

James Julius Barna, Somerville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 255,904, May 22, 1972, abandoned, which is a continuation of Ser. No. 79,625, Oct. 9, 1970, abandoned. This application July 10, 1974, Ser. No. 487,415
Int. Cl.² C08K 7/12
U.S. Cl. 260—40 R 7 Claims

1. A method of enhancing physical and electrical insulating properties of asbestos products which consists essentially of forming a sheet composition consisting of 85–95 weight percent of chrysotile asbestos fiber, 5–15 weight percent of butadiene polymeric binder, and an added 0–25 weight percent of a reinforcement-filler component, said composition containing no curing agent for said butadiene polymeric binder; and thereafter subjecting said sheet composition to a temperature in the range of from 130°C to 200°C in an oxidizing atmosphere for a period of at least one minute such that as compared to the properties of the unheated and non-oxidized sheet composition, the tensile strength, volume resistance, and stiffness of the heated oxidized sheet composition are increased and the dielectric constant and dissipation factor at 60Hz are reduced.

3,968,073

PROCESS FOR PRODUCING FIBER-GLASS REINFORCED PLASTICS

Junji Hara, Kamakura; Shigenori Togami, Yokohama, and Masami Tsuruta, Odawara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,915
Claims priority, application Japan, Sept. 8, 1972, 47-89575
Int. Cl.² C08K 7/14
U.S. Cl. 260—42.18 9 Claims

1. A process for the production of glass-fiber reinforced plastics, which process comprises the steps of partially copolymerizing a mixture consisting essentially of (A) 35–95% by weight methyl methacrylate, (B) 65–5% by weight of a vinyl aromatic hydrocarbon and (C) 0.2–5.0% by weight, based on the sum of said (A) and (B), of a polymerizable compound containing two or more ethylenically unsaturated groups, discontinuing the partial copolymerization before gelation of said mixture has taken place, impregnating glass fibers with the resultant partially polymerized mixture and curing the impregnated mixture.

3,968,074

REACTION PRODUCT OF 4,4-BIS-(HYDROXYMETHYL)-CYCLOHEXENE COMPOUNDS WITH SULFUR

Werner Schwarze, Frankfurt, and Siegfried Wolff, Bornheim-Merten, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

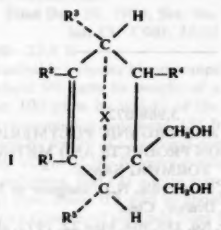
Filed Feb. 7, 1975, Ser. No. 548,218

Claims priority, application Germany, Apr. 22, 1974, 2419235

Int. Cl.² C07G 17/00; C08K 3/04, 3/06, 3/36

U.S. Cl. 260—42.24 35 Claims

6. A composition comprising (1) the sulfur containing reaction product of (a) a 4,4-bis-(hydroxymethyl)-cyclohexene compound of the formula



where R^1, R2 and R^4 are hydrogen, methyl or phenyl and there is also present either (1) X as the bridging member methylene or ethylene or (2) X is absent and there are present both R^3 and R^5 wherein R^3 and R^5 are hydrogen, methyl or phenyl with (b) sulfur as a reinforcing additive for (2) a light reinforcing filler, said composition containing in addition to (1) and (2) an elastomer cross-linkable with sulfur or a peroxide.

3,968,075

MOLDING COMPOSITION AND ARTICLES MOLDED THEREFROM

Edward I. Doucette, 6290 Sunset Blvd., Suite 414, Los Angeles, Calif. 90053; Robert W. Leiterman, 1618 N. Leafdale, El Monte, Calif. 91734, and Wesley C. Thompson, 1102 Charlinda St., West Covina, Calif. 91790

Continuation of Ser. No. 801,815, Feb. 24, 1969, abandoned. This application July 27, 1973, Ser. No. 383,318

Int. Cl.² C08K 3/04

U.S. Cl. 260—42.25 9 Claims

1. A curable composition for producing a battery container or cover therefor having improved combined properties of surface hardness, impact strength, and flexural modulus, said composition consisting essentially of a mixture of:

rubber hydrocarbon polymer selected from the class consisting of natural rubber, copolymers of butadiene styrene or butadiene acrylonitrile, or compatible mixtures of natural rubber and/or said copolymers, the content of said rubber hydrocarbon polymer being about 9% of the composition by weight;

a filler consisting of finely divided petroleum coke, said filler making up about 75% of the composition by weight;

sulfur in an amount by weight being about 13% of the rubber hydrocarbon polymer content;

an accelerator making up about 0.27% of the composition by weight;

the remainder of the composition being made up of suitable quantities of activator and plasticizer.

3,968,076

COVULCANIZATION OF CONJUGATED DIENE-CONTAINING BUTYL WITH HALOBUTYL AND BUTYL RUBBER

Albert M. Gessler, Cranford, and Francis P. Baldwin, Summit, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 393,349, Aug. 31, 1973, abandoned. This application June 2, 1975, Ser. No. 582,691

Int. Cl.² C08K 3/04; C03L 23/22

U.S. Cl. 260—42.35 10 Claims

1. A compositon of matter comprising a curable blend of from 5 to 95 weight percent (wt. %) conjugated diene-containing butyl rubber consisting essentially of a copolymer consisting of from 85 to 99.5% by weight of an isoolefin having from 4 to 7 carbon atoms, combined with 15 to 0.5% by weight of a conjugated diolefin having from 4 to 14 carbon atoms, containing in the linear backbone conjugated diene unsaturation, the copolymer having a number average molecular weight of from about 5,000 to 500,000 and from 95 to 5 wt. % of a rubber selected from the group consisting of butyl or halogenated butyl rubber.

3,968,077

METHOD OF STABILIZING POLYTHIOL REACTION PRODUCTS

Jesse C. H. Hwa, Stamford, Conn., and Jung Il Jin, Irvington, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 14, 1974, Ser. No. 497,360

Int. Cl.² C08K 5/00

U.S. Cl. 260—45.8 A 4 Claims

1. A method of stabilizing a reaction composition of a polythiol and sulfur which comprises contacting said composition with an effective amount of an epoxide stabilizing agent.

3,968,078

ALKYL ALKANOATE DERIVATIVES OF SUBSTITUTED PIPERAZINE-DIONES AND POLYMER COMPOSITIONS STABILIZED THEREBY

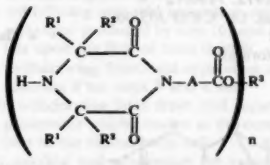
Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 376,785, July 5, 1973, Pat. No. 3,920,659, which is a continuation-in-part of Ser. No. 239,795, March 30, 1972, abandoned. This application Oct. 15, 1975, Ser. No. 622,554

Int. Cl.² C07D 241/08; C08K 5/34

U.S. Cl. 260—45.8 N 6 Claims

1. A compound of the formula



wherein

R^1 and R^2 are independently of each other methyl or ethyl;

n is an integer of from 1 to 2;

when n is 1, R^3 is alkyl of from 1 to 20 carbon atoms;

when n is 2, R^3 is alkylene of from 2 to 8 carbon atoms; and

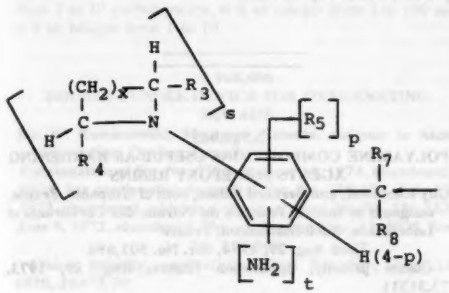
A is a straight or branched chained (lower) alkylene group having from 1 to 6 carbon atoms with the limitation that the terminals of said alkylene group bear only hydrogen or one (lower) alkyl group.

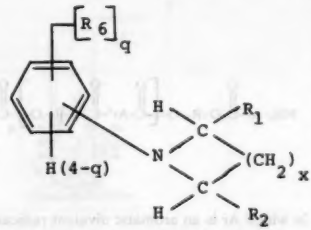
3,968,079
RUBBER COMPOSITIONS STABILIZED WITH HETEROCYCLIC NITROGENOUS ANTIOXIDANTS

Paul A. Pinke, Des Plaines, and Stephen N. Massie, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 26, 1974, Ser. No. 536,492
Int. Cl.² C08K *5/34*
U.S. Cl. 260—45.8 R **10 Claims**

1. A rubber substrate containing, as an antioxidant therefor, an effective amount of a mono- or di(heterocyclic nitrogen)-substituted diarylalkane possessing the formula:





wherein R_1, R_2, R_3, R_5, R_6, R_7 and R_8 are selected from the group consisting of methyl or hydrogen, *x* is selected from the numbers 2 and 3, s is selected from the numbers 0 or 1, t is selected from the numbers 1 or 0 wherein, when s is equal to 0, t is equal to 1 and when s is equal to 1, t is equal to 0, and p and q are selected from the integers from 0 to 4.

3,968,080
N,N′-DIALKYL-P-PHENYLENEDIAMINE MIXTURE

Helmut Ludwig Merten, Hudson, and Gene Ray Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1974, Ser. No. 513,714
Int. Cl.² C08J *6/00*
U.S. Cl. 260—45.9 QB **8 Claims**

4. Vulcanizable diene rubber having incorporated therein a stabilizing amount of dialkyl-p-phenylenediamine composition comprising first component of symmetrical N,N′-di(sec-hexyl)-p-phenylenediamine in less than 50% by weight of the total composition, second component of unsymmetrical N-(sec-hexyl)-N′-(sec-alkyl)-p-phenylenediamine having 7 or 8 carbon atoms in said sec-alkyl in amount greater than the first component and greater than 40% of the total composition, and third component of symmetrical N,N′-di(sec-alkyl)-p-phenylenediamine having 7 or 8 carbon atoms in each alkyl group.

3,968,081
SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer Douglas Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 15, 1976, Ser. No. 649,500
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.75 N **9 Claims**

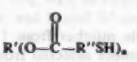
1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiSO_4$, nickel acetylacetonate, nickel formate, nickel oxalate, and hydrates thereof, and (B) V_2O_5, said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

3,968,082
STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS

Donald E. Hudgin, Princeton Junction, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sept. 9, 1974, Ser. No. 504,620
Int. Cl.² C08K *5/36, 5/37*
U.S. Cl. 260—45.85 H **10 Claims**

1. A stabilized ethylene-carbon monoxide copolymer composition containing about 0.1 to 20% based on the weight of polymer in the base composition of a stabilizer compound having the structural formula



wherein R′ and R″ are hydrocarbon radicals and *n* is at least 2.

7. A stabilized ethylene-carbon monoxide copolymer composition containing about 0.1 to 20% based on the weight of polymer in the base composition of a stabilizer compound having the structural formula

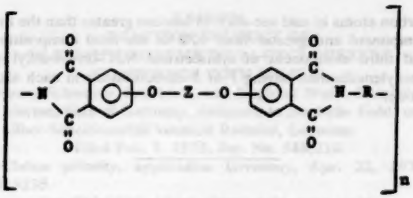
wherein R is a hydrocarbon radical containing up to 30 carbon atoms and is free of substituents which adversely affect the properties of the copolymer composition and *n* is at least 2.

3,968,083
NOVEL POLYETHERIMIDES

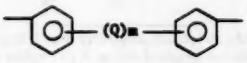
Clayton B. Quinn, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1975, Ser. No. 553,659
Int. Cl.² C08G *73/10*
U.S. Cl. 260—47 CP **5 Claims**

1. A polyetherimide corresponding to the formula

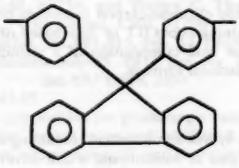


where *n* is a whole number greater than 1, R is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(2-8)}$ alkylene terminated polydiorganosiloxanes, cyclo-alkylene radicals having from 2–20 carbon atoms, and (c) divalent radicals included by the formula

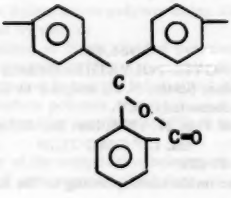


where Q is a member selected from the class consisting of —O—,

—S—, $-C_xH_{2x}-$, where *x* is a whole number from 1 to 5 inclusive, *m* is 0 or 1, and Z is a member selected from the groups



and



3,968,084

CURABLE COMPOSITION OF EPOXY RESIN AND CURED PRODUCT THEREOF

Toshio Yukuta, Kodaira, and Takashi Ohashi, Iruma, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 527,081

Claims priority, application Japan, Nov. 28, 1973, 48-132550

Int. Cl.² C08G *59/14*, *59/22*, *59/40*

U.S. Cl. 260—47 EN 6 Claims

1. A curable epoxy resin composition which comprises an epoxy resin having one or more epoxy groups per molecule and 3,9-bis(2-hydrazidoethyl)-2,4,8,10-tetraoxaspiro-[5,5]-undecane in an amount sufficient to act as a curing agent and produce a cured epoxy resin.

3,968,085

POLYAMINE COMPOSITIONS USEFUL AS HARDENING AGENTS FOR EPOXY RESINS

Guy Rabilloud, and Bernard Sillion, both of Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Aug. 29, 1974, Ser. No. 501,696

Claims priority, application France, Aug. 29, 1973, 73.31311

Int. Cl.² C08G *17/14*

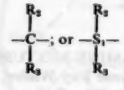
U.S. Cl. 260—75 N 13 Claims

1. A composition consisting essentially of at least one aromatic polyamine of the general formula:

(1)

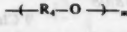
in which Ar is an aromatic divalent radical, said radical being unsubstituted benzene or benzene substituted by halogen or alkyl, or two fused benzene rings, or two benzene rings bonded by a single bond or by:

—O—; —S—; —SO—; $-SO_2-$; —CO—;



in which R_2 and R_3 are hydrogen atoms or monovalent hydrocarbon radicals; and in which Ar' is an aromatic divalent radical having two valences on separate carbon atoms and being a single benzene ring, or pyridine, or two fused benzene rings, or two benzene rings joined by a single bond or by —O—; —CO—; or

in which R_2 and R_3 are hydrogen atoms or monovalent hydrocarbon radicals; each radical R_1 is selected from the divalent saturated aliphatic, saturated alicyclic, aliphatic alicyclic and arylaliphatic hydrocarbon radicals having from 2 to 24 carbon atoms and from the divalent radicals of the formula:



in which R_4 is a divalent saturated aliphatic radical having from 2 to 10 carbon atoms, m is an integer from 1 to 100 and n is an integer from 1 to 10.

3,968,086

DOUBLE FUNNEL DEVICE FOR OXYGENATING SEWAGE

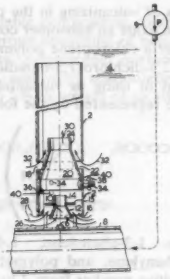
Jan W. Romanowski, Montreal, Canada, assignor to Atara Corporation, Quebec, Canada

Continuation of Ser. No. 479,449, June 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,694, July 19, 1973, abandoned, which is a continuation of Ser. No. 151,352, June 9, 1972, abandoned. This application Mar. 13, 1975, Ser. No. 557,908

Claims priority, application United Kingdom, June 12, 1970, 28473/70

Int. Cl.² B01F *3/04*

U.S. Cl. 261—77 **5 Claims**



1. An apparatus for oxygenating liquid sewage, comprising:

means for supplying a pressurized oxygen-containing gas, said means including an orifice for issuing a continuous stream of said gas upwardly from below the top surface of a volume of liquid sewage;

a first funnel means;

means to secure said first funnel means at a location downstream from said orifice, said first funnel converging in the downstream direction, the upstream opening of said first funnel comprising a first inlet for entraining liquid sewage into said first funnel by gas issuing in the downstream direction from said orifice;

a second funnel extending downstream from the downstream opening of said first funnel means;

means to secure said second funnel means in a predetermined relationship to said first funnel, said second funnel converging in the downstream direction, the upstream opening of said second funnel comprising a second inlet for entraining liquid sewage into said second funnel by sewage and gas issuing from the downstream opening of said first funnel;

and an exit tube of substantially constant diameter extending both upstream and downstream from the downstream opening of said second funnel, an upstream opening cut in said exit tube comprising a third inlet for entraining liquid sewage into said exit tube by liquid sewage and gas issuing from the downstream opening of said second funnel;

means for securing the exit tube to said gas supplying means;

and wherein the first and second funnel securing means comprise means for mounting said first and second funnels within the upstream extension of said tube, whereby said funnels are secured in said predetermined relationship to one another and to said orifice.

3,968,087

POLYMERIZATION OF 2-PYRROLIDONE

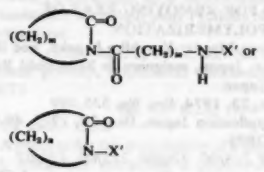
Sam Kwon Choi, Seoul, South Korea, assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 309,082, Nov. 24, 1972, Pat. No. 3,875,147. This application Nov. 8, 1974, Ser. No. 522,037

Int. Cl.² C08G *69/24*

U.S. Cl. 260—78 P **8 Claims**

1. A method of making a polymer of 2-pyrrolidone in solid form, which comprises polymerizing 2-pyrrolidone in the presence of an alkaline polymerization catalyst and, as an activator or co-catalyst, an effective amount of a complex of a Lewis acid of the formula MX_a and a halogenated lactam of the formula:



where $m = 2$ or 3, $n = 5$ to 11; M is a metal of Group IIIA, IVA, VA, VIA or IVB of the Periodic Table; a is the valence of M; and X and X′ are independently chlorine or bromine.

3,968,088

PROCESS FOR PREPARING A THERMOPLASTIC RESIN

Harumi Asai, and Akira Wada, both of Kamakura, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1974, Ser. No. 464,905

Claims priority, application Japan, May 7, 1973, 48-50485

Int. Cl. C08d *102, 304*

U.S. Cl. 526—283 **6 Claims**

1. A process for preparing a substantially gel-free thermoplastic resin having a softening point of 50°–180°C., an iodine value not exceeding 180 and a Gardner color of not more than 5, said process comprising heating at a temperature of 250°–300°C. a solution of a monomeric mixture consisting of 90–60% by weight of a cyclopentadiene type monomer selected from the group consisting of cyclopentadiene, methylcyclopentadiene, dicyclopentadiene, methyldicyclopentadiene and dimethylcyclopentadiene and 10–40% by weight of a chain conjugated diolefin monomer of 4–5 carbon atoms at a monomer concentration of 70–95% by weight in a hydrocarbon solvent inert to thermal polymerization conditions to effect the thermal polymerization of said monomeric mixture and thereafter recovering the resulting polymer from the solvent.

3,968,089

POLYMER-PREPOLYMER COMPOSITION PREPARED BY POLYMERIZING AN ETHYLENICALLY UNSATURATED MONOMER IN THE PRESENCE OF AN ISOCYANATE-TERMINATED PREPOLYMER

Michael Cuscurida, and George Phillip Speranza, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Nov. 18, 1974, Ser. No. 524,567
Int. Cl.² C08G *18/14*; C08L *27/00*
U.S. Cl. 260—859 R 21 Claims

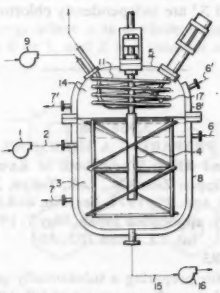
1. An isocyanate-terminated polyether-based polymer prepolymer composition consisting of a polymer dispersed in an isocyanate-terminated polyether-based prepolymer composition, wherein said prepolymer composition is obtained by reaction of a polyether polyol and an organic polyisocyanate, in a ratio such that the isocyanate index is from about 4 to about 20, said polyether polyol having a molecular weight of from about 2,000 to about 10,000 and being formed by reaction of an alkylene oxide of from 2 to 4 carbon atoms with a polyhydric alcohol initiator having a functionality of from 2 to 6, said organic polyisocyanate having a functionality of from 2 to 4, and said polymer is obtained by polymerizing one or more ethylenically unsaturated monomers which are nonreactive with isocyanato groups in the presence of an effective amount of a free radical catalyst and in the presence of the prepolymer composition with said polymer being present in the polymer prepolymer composition in an amount of from about 5 to about 25 weight percent, based upon the total polymer prepolymer composition.

3,968,090

METHOD FOR REMOVING HEAT OF POLYMERIZATION

Kazushi Shimada; Toru Maeda; Yasuhiko Iwaoka, and Hisao Anzai, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,489
Claims priority, application Japan, Dec. 28, 1973, 49-950; June 27, 1974, 49-72805
Int. Cl.² C08F *218/00*, *220/00*, *222/00*, *120/02*
U.S. Cl. 526—88 3 Claims



1. A method for removing the heat of polymerization evolved during bulk polymerization of methyl methacrylate or a mixture of a predominant amount of methyl methacrylate and a minor amount of at least one other copolymerizable monomer in which method the liquid polymerization mixture is stirred while polymerization is performed, comprising the step of: condensing a condensable vapor present in the space above the liquid level of the polymerization mixture inside the polymerization reactor by a cooling means provided in said space while the vapor phase above the liquid level is stirred and the inner pressure of the polymerization reactor is maintained at such a level that the polymerization mixture does not boil.

3,968,091

LOW MELT INDEX ETHYLENE-VINYL ACETATE COPOLYMERS

Claude J. Stiles, Tuscola, and Byford P. Hancock, Villa Grove, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 150,712, June 7, 1971, abandoned. This application July 23, 1973, Ser. No. 381,651
Int. Cl.² C08F *6/00*, *218/08*
U.S. Cl. 528—503 9 Claims

1. A process for decreasing the melt index of preformed ethylene-vinyl acetate copolymers having about 8–55 weight percent vinyl acetate to a level sufficient for extrusion applications which comprises mechanically working a composition consisting essentially of the copolymer, at a peak temperature below the degradation temperature of the copolymer and for a maximum period of residence time at the peak temperature of 5 minutes.

3,968,092

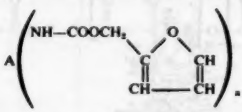
USE OF AROMATIC FURFURYL POLYCARBAMATES AS CHLOROPRENE POLYMER VULCANIZATION ACCELERATORS

Wilhelm Franz Gruber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 452,337, March 18, 1974, abandoned. This application Mar. 5, 1975, Ser. No. 555,432
Int. Cl.² C08F *214/00*, *136/16*, *218/00*, *18/24*
U.S. Cl. 526—17 14 Claims

1. In the process of vulcanizing in the presence of magnesium oxide and zinc oxide an elastomer composition comprising as the elastomer a chloroprene polymer containing 0–60 weight percent of 2,3-dichloro-1,3-butadiene,

the improvement of using as vulcanization accelerator a polycarbamate represented by the following formula



wherein A is 1,3-phenylene, 1,4-phenylene, 4,4′-methylenediphenylene, and polymethylene polyphenyl; and n is a positive number from 2 to 3;

provided that the aromatic rings in the A radical can be substituted with one or more C_1–C_4 alkyl groups;

the proportion of the polycarbamate being about 0.5–4 parts; the proportion of magnesium oxide being about 0.4–15 parts; and the proportion of zinc oxide being about 2–15 parts; all parts being by weight per 100 parts by weight of the polymer.

3,968,093

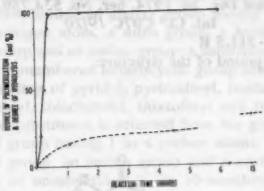
PROCESS FOR PRODUCING PARTIALLY HYDROLYZED POLYACRYLAMIDE IN THE PRESENCE OF ALKALI METAL HYDROXIDE AND BORIC ACID

Masao Hasegawa, Tokyo; Akihisa Furuno; Haruhiko Ishikawa, both of Yokohama, and Yasuo Ogawa, Kawasaki, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,443
Claims priority, application Japan, May 12, 1973, 48-52145; May 12, 1973, 48-52146
Int. Cl.² C08F *120/52*, *120/70*; C02C *1/02*; B10D *5/00*
U.S. Cl. 526—303 8 Claims

1. A process for producing partially hydrolyzed polyacrylamide, which comprises polymerizing acrylamide monomer in

an aqueous solution in the presence of alkali metal hydroxide and boric acid, whereby the polymer formed is also hydro-



lyzed simultaneously with said polymerizing and the resulting polymer is of high molecular weight and high water solubility.

3,968,094

PHOTODEGRADABLE PLASTICS CONTAINING HALOOLEFINS

Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of the Department of Agriculture, Washington, D.C.

Filed Nov. 26, 1974, Ser. No. 527,403

Int. Cl.² C08J *3/20*

U.S. Cl. 526—914 **9 Claims**

1. A photodegradable composition comprising a polyolefin selected from the group consisting of polyethylene, polypropylene, polybutylene, polystyrene, mixtures of polyethylene and polypropylene, and vinyl acetate/ethylene copolymers, and about from 1 to 5% by weight of an additive of the structure

$$(XH_2C)_nCH_m = CH_m(CH_2X)_n$$

wherein:
X is chlorine, bromine, or iodine
n is 1 or 2
m is 2—*n*.

3,968,095

PHOTODEGRADABLE PLASTICS CONTAINING AN N-HALO AMIDE

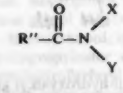
Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 453,911, March 22, 1974. This application May 30, 1975, Ser. No. 582,507

Int. Cl.² C08J *3/20*

U.S. Cl. 526—914 **2 Claims**

1. A photodegradable composition comprising a polyolefin selected from the group consisting of polyethylene, polypropylene, polybutylene, polystyrene, mixtures of polyethylene and polypropylene, and vinyl acetate/ethylene copolymers and about from 0.1 to 10% of an additive of the structure —



wherein X is chlorine, bromine, or iodine, Y is hydrogen, chlorine, bromine, or iodine, and R' is a monovalent hydrocarbon radical containing 1 to 18 carbon atoms.

3,968,096

PHOTODEGRADABLE POLYOLEFINS CONTAINING AN HALOGENATED NITRILE

Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 543,706, Jan. 23, 1975. This application Aug. 8, 1975, Ser. No. 603,080

Int. Cl.² C08J *3/20*

U.S. Cl. 526—914 **2 Claims**

1. A photodegradable composition comprising a polyolefin and about from 0.1 to 10% of an additive of the structure

$$C(CN)_rX_q$$

wherein:
X is chlorine, bromine, or iodine
r is 1, 2, or 3
q is 4—*r*.

3,968,097

VEGETABLE PROTEIN EXTRACTION AT A PH 1-5-3 USING GEL FILTRATION

Michel John Arthur Groux, Lauperswil; Ernesto Dalan, Vevey; Jan Kruseman, Coriser-sur-Vevey, and Pierre Yves Bertschy, Chardonne, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 2, 1974, Ser. No. 457,227

Claims priority, application Switzerland, Apr. 17, 1973, 5528/73

Int. Cl.² A23J *1/14*

U.S. Cl. 260—123.5 **9 Claims**

1. A process for the preparation of a soluble protein fraction which comprises extracting a protein-containing vegetable material with an aqueous medium at a pH value between 1.5 and 3, separating the resulting aqueous extract from vegetable material insolubles, treating said aqueous extract by gel filtration at a pH value below 4 and recovering a soluble protein fraction by elution.

3,968,098

ISOLATION PROCESS FOR WATER-SOLUBLE DYES

Anthony Kenneth Dunn; David Hugh Spence, and Bryan Stockton, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 318,086, Dec. 18, 1972, abandoned. This application June 6, 1974, Ser. No. 476,941

Int. Cl.² C09B *46/00*

U.S. Cl. 260—208 **4 Claims**

1. A process for the isolation of a water-soluble dye containing one or more groups selected from sulfuric acid and carboxylic acid groups from an aqueous paste containing said dye and an inorganic salt, said process comprising

a. washing said paste with a water-miscible lower alkanol to displace an aqueous solution of an inorganic salt therefrom;
b. slurrying the resulting washed paste with water;
c. subjecting the resulting slurry to steam distillation to remove the lower alkanol therefrom; and
d. subjecting the aqueous distillation residue resulting from (c) to spray drying so as to recover said dye.

3,968,099

PROCESS FOR THE PREPARATION OF AZO DYESTUFFS CONTAINING CYANO GROUPS

Klaus Leverenz, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 17, 1975, Ser. No. 542,051

Claims priority, application Germany, Jan. 19, 1974, 2402544

Int. Cl.² C09B 43/00

U.S. Cl. 260—208 3 Claims

1. Process for the preparation of an azo dyestuff which contains in the diazo component at least one cyano group in the orthoposition to the azo bridge, which comprises reacting an azo dyestuff of the general formula

wherein

A is an aromatic-carbocyclic radical,

K is the radical of a coupling component and

X is a chlorine, bromine or iodine atom which is in the o-position to the azo group with CuCN or CuCN-forming compounds in polar organic solvents having a dielectric constant of >10 in the presence of an azole selected from the group consisting of imidazole, 1-methylimidazole, 2-methylimidazole, benzimidazole, 1-methylbenzimidazole, 2-methylbenzimidazole, 2-methylbenzthiazole, 4,5-dimethylthiazole, 2-methylbenzoxazole, and pyrazole, and recovering said azo dyestuff wherein the halogen substituent X is replaced by a cyano substituent.

3,968,100

GUANIDIO DERIVATIVES OF KASUGAMYCIN AND THEIR PRODUCTION

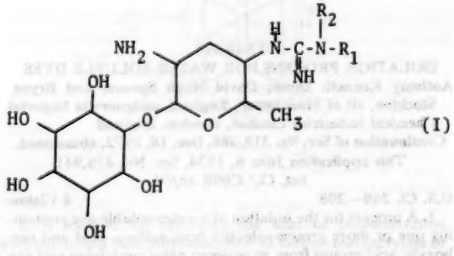
Hamao Umezawa, and Yasuji Suhara, both of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Jan. 24, 1972, Ser. No. 220,374

Int. Cl.² C07H 15/22

U.S. Cl. 260—210 AB 5 Claims

1. A guanidino derivative of kasugamycin of the formula:



(I)

wherein R_1 and R_2 are hydrogen, hydroxyl, amino, alkyl, amino-alkyl, phenyl, or alkyl-sulfonyl, wherein said alkyl, amino-alkyl and alkyl-sulfonyl group have 1–4 carbon atoms.

3,968,101

8-SUBSTITUTED CYCLIC NUCLEOTIDES BY FREE RADICAL ALKYLATION AND ACYLATION

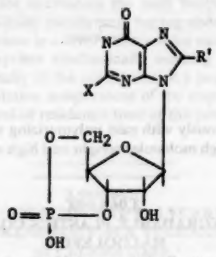
Leon F. Christensen, Costa Mesa, and Roland K. Robins, Santa Ana, both of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed Dec. 20, 1974, Ser. No. 534,750

Int. Cl.² C07C 19/20

U.S. Cl. 260—211.5 R 17 Claims

1. The compound of the structure:



wherein X is H or NH_2; and R' is iso-propyl; neo-pentyl; C_1 to C_8 substituted alkyl wherein the alkyl is substituted at the 1-alkyl position and the substituents are selected from the group consisting of hydroxyl, phenyl, semicarbazone, thiosemicarbazone, 4-phenyl semicarbazone, and phenyl hydrazone; benzyl; C_1 to C_8 acyl; or carbamoyl.

3,968,102

S-SUBSTITUTED-2-THIOADENOSINES

Hideo Suehiro; Kiyomi Kikugawa, both of Kokubunji; Motonobu Ichino, Mitaka, and Tokuro Nakamura, Mitaka, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

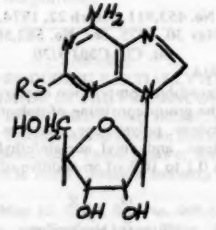
Filed Apr. 16, 1975, Ser. No. 568,491

Claims priority, application Japan, Apr. 18, 1974, 49-42718; Apr. 19, 1974, 49-43430

Int. Cl.² C07H 19/16

U.S. Cl. 260—211.5 R 18 Claims

1. A compound of the formula



wherein R is a mono- or di-hydroxyalkyl group or a mono- or dicarboxylalkyl group having 1 to 7 carbon atoms in the alkyl moiety which can be a straight or branched chain; a mono-hydroxyalkenyl group or a mono-carboxyalkenyl group having

2 to 5 carbon atoms in the alkenyl moiety which can be a straight or branched chain; a 2-hydroxy-, 4-hydroxy-, 2-carboxy- or 4-carboxy-cyclohexyl group; a phenyl group; a naphthyl group; an o- or p-mono-substituted, or o- or p-di-substituted phenyl group or a mono- or di-substituted-2-naphthyl group wherein the substituent of the phenyl or naphthyl group is selected from the group consisting of an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 or 2 carbon atoms, a halogen atom, a nitro group, a hydroxyl group, a carboxyl group and an amino group; a substituted or unsubstituted 5- or 6-membered heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, imidazolyl, thienyl, furyl, thiazolyl, thiadiazolyl, thiazolinyl and triazolyl groups wherein the substituent is selected from the group consisting of an alkyl group having 1 to 4 carbon atoms, a nitro group, a hydroxyl group, an amino group and a carboxyl group; a substituted or unsubstituted 9- or 10-membered condensed heterocyclic group selected from the group consisting of indolyl, quinolyl, isoquinolyl, benzimidazolyl, purinyl, benzothiazolyl, pteridinyl and benzoxazolyl groups wherein the substituent is selected from the group consisting of a nitro group, an amino group and a hydroxyl group; a 1- or 2-adamantyl group; or a 2-norbornyl group.

3,968,103

1,2,3-TRIAZOLE NUCLEOSIDES

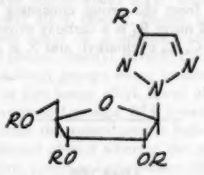
Roland K. Robins, Santa Ana, and Joseph T. Witkowski, Laguna Niguel, both of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed Sept. 28, 1972, Ser. No. 292,930

Int. Cl.² C07H *19/04*

U.S. Cl. 260—211.5 R **13 Claims**

1. A 1,2,3-triazole nucleoside of structure



wherein R is hydrogen acetyl or benzoyl and R' is selected from the group consisting of nitro, carboxamido, thiocarboxamido, cyano and carbomethoxy groups.

3,968,104

EXTREMELY LOW VISCOSITY ADDUCTS OF LACTAMS WITH ALCOHOLS

Kuno Wagner, Leverkusen-Steinbuechel, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 207,562, Dec. 13, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,892

Claims priority, application Germany, Dec. 17, 1970, 2062288

Int. Cl.² C07D *223/10*

U.S. Cl. 260—239.3 R **8 Claims**

1. Adduct of a lactam selected from the group of epsilon-caprolactam, 1-N-methyl hexahydro-1,4-diazepin-3-one, propiolactam, butyrolactam, valerolactam and dodecalactam, with an alcohol selected from the group of methanol, ethanol, propanol, n-butanol, isopropanol, t-butanol, cyclohexanol, allyl alcohol, ethylene glycol monomethyl ether, benzyl alcohol, chloroethanol, fluoroethanol, trichloroethanol, trifluoroethanol, beta-hydroxypropylester of C_{1-4} carboxylic acids, furfuryl alcohol, tetrahydrofurfuryl alcohol, n-butyl mercaptan, dodecyl mercaptan, mercaptoethanol, a hemiacetal of the foregoing alcohols with formaldehyde or chloral; ethylene glycol; diethylene glycol; thioglycol; a propane diol isomer; di- or tri-propylene glycol; glycerine, tri-methylol propane, hexane-1,6-diol or other isomer of hexane diol; hexahydroquinone; 1,4-bis-hydroxymethyl cyclohexane; terpin hydrate; mono-, di, tri- or tetra-methylol cyclohexanone; anhydroenneaheptiotol; phthalic or terephthalic acid diglycol ester; methylene glycol; a mono- or bis-hemiacetal of formaldehyde or chloral of any of the aforementioned polyhydroxyl compounds; n-methyl diethanolamine; bis hydroxyethyl cyclo-hexylamine; and bis-hydroxyethyl stearylamine, and an N-methylol derivative of valeorlactam, butyrolactam, caprolactam, propiolactam, N-butylethylurethan, N-methylol benzamide, N-hydroxymethyl naphthalimide, ethanolamine, N-methylethanol amine, cyclohexylethanolamine, oxethylated benzoic acid amide, hydroxyethyl acetamide, hydroxyethyl carbamic acid butyl ester, N,N-dimethylethanolamine, N,N-diethylethanolamine, and hydroazinoethanol, said adduct containing from 0.3 to 4 moles of said alcohol per mol of said lactam.

2. Adduct of a lactam selected from the group of epsilon-caprolactam, 1-N-methyl hexahydro-1,4-diazepin-3-one, propiolactam, butyrolactam, valerolactam and dodecalactam, with primary and secondary alcohols containing cyclic acetal group of formaldehyde, acetaldehyde or acrolein and alcohols with carbonyl or oxirane groups in the molecule, said adduct containing from 0.3 to 4 moles of said alcohol per mol of said lactam.

3,968,105

PROLONGED RELEASE OF ANTIFERTILITY DRUGS

Allan Poe Gray, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Dec. 30, 1974, Ser. No. 537,676

Int. Cl.² C07J *43/00*

U.S. Cl. 260—239.5 **11 Claims**

1. A complex having a prolonged antifertility effect, said complex comprising the reaction product of an antifertility drug, tannic acid and a polyvalent metal ion, said antifertility drug being in the form of a basic amine derivative of said drug.

3,968,106

PROCESS FOR THE MANUFACTURE OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE-2,2-DIOXIDE AND ITS USE AS SWEETENER

Karl Clauss, Rossert, Taunus; Hartmut Pietsch, Hofheim, Taunus; Erwin Schmidt, Kelkheim, Taunus, and Harald Jensen, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 16, 1975, Ser. No. 596,226

Claims priority, application Germany, July 18, 1974, 2434564

Int. Cl.² C07D *291/06*

U.S. Cl. 260—243 R **7 Claims**

1. In the process for the manufacture of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one-2,2-dioxide or the nontoxic salts thereof by reacting acetone and fluorosulfonyl isocyanate to obtain acetoaceticamide-N-sulfofluoride and bringing about cyclization thereof by a treatment with an aqueous or alcoholic base or a combination thereof at a pH of from 5 to 12, the improvement which comprises reacting acetone and fluorosulfonyl isocyanate at a temperature of from 0° to 60°C in a molar proportion of from 14:1 to 150:1 and distilling off the excess acetone before cyclization.

3,968,107

PROCESS FOR THE MANUFACTURE OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE-2,2-DIOXIDE

Karl Clauss, Rossert, Taunus; Erwin Schmidt, Kelkheim, Taunus; Hartmut Pietsch, Hofheim, Taunus, and Harald Jensen, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 16, 1975, Ser. No. 596,247

Claims priority, application Germany, July 18, 1974, 2434549

Int. Cl.[2] C07D 291/06

U.S. Cl. 260—243 R 8 Claims

1. In the process for the manufacture of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one-2,2-dioxide and of the nontoxic salts thereof by reacting acetoacetic acid with fluorosulfonyl isocyanate to yield acetoacetic acid amide- N-sulfofluoride and forming the oxathiazinone ring the improvement which comprises reacting acetoacetic acid with fluorosulfonyl isocyanate at a temperature of from −20°C to +50°C in the presence of from 0.5 to 2 moles, calculated on the isocyanate used, of an alkali metal fluoride or a tertiary amine of the formula

in which R_1, R_2, R_3 represent identical or different alkyl radicals having from 1 to 10 carbon atoms, two of the radicals R_1 to R_3 optionally form together an alkylene radical which may contain N, O, or S as a hetero atom or one of the radicals R_1 to R_3 represents a phenyl radical, or of pyridine or quinoline, or of a mixture of the aforesaid compounds, and transforming the salt of acetoacetamide-N-sulfofluoride obtained into the salt of oxathiazinone or the free oxathiazinone by a treatment with an aqueous or alcoholic base or a combination thereof.

3,968,108

PROCESS FOR PREPARING A DESACETOXYCEPHALOSPORIN FROM A PENAM AND/OR A CEPHAM COMPOUND

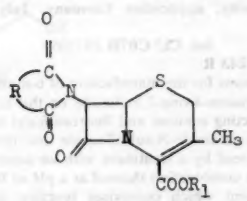
Stjepan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 267,795, June 30, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,098

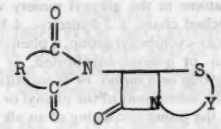
Int. Cl.[2] C07D 501/10, 501/04

U.S. Cl. 260—243 C 13 Claims

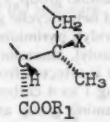
1. A process for preparing a compound of the formula:

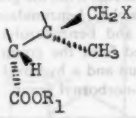


which comprises the step of reacting a compound of the formula:



in which Y is





or a mixture of the two, with a compound of the formula

in which, in the above formulae, R is C_2-C_4 alkylene, C_2-C_4 alkenylene, $-CH_2-Z-CH_2-$ in which Z is oxygen or sulfur, 1,2-cyclohexylene, 1,2-phenylene, 1,2-cyclohexenylene, or a monosubstituted derivative of any of the above having a substituent selected from the group consisting of C_1-C_3 alkyl, C_1-C_3 alkoxy, and nitro; R_1 is a carboxy protecting group; R_2 is C_1-C_4 alkyl or C_3-C_6 cycloalkyl; and X is chlorine or bromine.

3,968,109

PRODUCTION OF 2-(THIO SUBSTITUTED)CEPHALOSPORIN SULFOXIDES AND 2-(THIO SUBSTITUTED)CEPHALOSPORINS

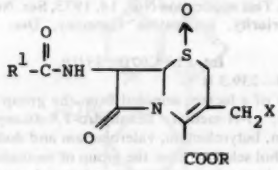
William Henry Koster, Pennington, and Joseph Edward Dolfini, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 23, 1973, Ser. No. 418,520

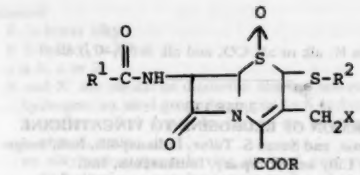
Int. Cl.[2] C07D 501/04, 501/18

U.S. Cl. 260—243 C 19 Claims

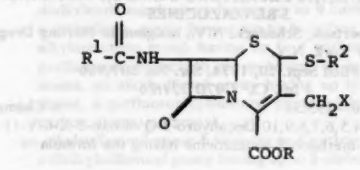
1. A process which comprises reacting a compound of the formula



with an electrophilic compound of the formula $R^2—S—Y$ or $(R^2S)_2$ in the presence of an alkali metal lower alkoxide, phenyl lithium, triphenylmethyl lithium, lithium-lower alkylamide or alkali metal hydride at a temperature in the range of about −78°C. to +30°C. thereby producing a compound of the formula

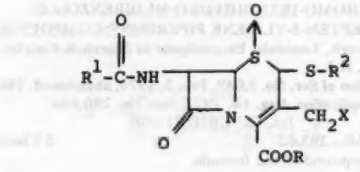


and chemically reducing the last compound with phosphorus halide, acetyl chloride-alkali metal dithionite, stannous halide or alkali metal iodide-acetyl chloride-acetic acid to obtain as a product a compound of the formula



wherein in each of said formulas R is lower alkyl, lower alkoxybenzyl, nitrobenzyl, halo-lower alkyl or lower alkylsilyl; R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, α-aminophenyl-lower alkyl, α-hydroxyphenyl-lower alkyl, phenoxy-lower alkyl, phenylthio-lower alkyl, pyridylthio-lower alkyl, lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, pyridyl-lower alkyl, thienyl, thenyl, furylmethyl, cyclo-lower alkyl-lower alkyl or α-aminocyclo-lower alkadiene-lower alkyl, said phenyl, thienyl, pyridyl, cyclo-lower alkyl and cyclo-lower alkadienyl groups being unsubstituted or substituted with one or two lower alkyl, lower alkoxy, halo, nitro, amino or trifluoromethyl groups: R^2 is lower alkyl, substituted lower alkyl wherein the substituent is halo or lower alkoxy, phenyl or substituted phenyl wherein the substituent is halo, lower alkoxy, nitro, cyano or carbo-lower alkoxy; X is hydroxy lower alkoxy, lower alkanoyloxy or lower alkylthio; and Y is halogen or $—SO_2—Z$ wherein Z is lower alkyl, lower alkylcarbonylthio or lower alkylthio.

10. A compound of the formula



wherein R is hydrogen, lower alkyl, trichloroethyl, phenyl-lower alkyl, nitrophenyl-lower alkyl or lower alkoxyphenyl-lower alkyl; R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, α-aminophenyl-lower alkyl, α-hydroxyphenyl-lower alkyl, phenoxy-lower alkyl, phenylthio-lower alkyl, pyridylthio-lower alkyl, lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, pyridyl-lower alkyl, thienyl, thenyl, furylmethyl, cyclo-lower alkyl-lower alkyl or α-aminocyclo-lower alkadiene-lower alkyl, said phenyl, thienyl, pyridyl, cyclo-lower alkyl and cyclolower alkadienyl groups being unsubstituted or substituted with one or two lower alkyl, lower alkoxy, halo, nitro, amino or trifluoromethyl groups; R^2 is lower alkyl, substituted lower alkyl wherein the substituent is halo or lower alkoxy, phenyl or substituted phenyl wherein the substituent is halo, lower alkoxy, nitro, cyano or carbo-lower alkoxy; and X is hydrogen, lower alkoxy, lower alkanoyloxy or lower alkylthio.

3,968,110

SULFOSUCCINATE DERIVATIVES AS DETERGENT BUILDERS

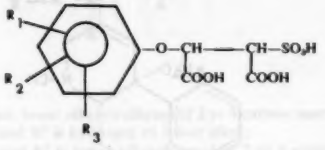
Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 394,613, Sept. 5, 1973, Pat. No. 3,925,375, which is a division of Ser. No. 156,933, June 25, 1971, abandoned. This application May 19, 1975, Ser. No. 578,703

Int. Cl.² C07D *295/00;* **C07C** *143/54*

U.S. Cl. 260—247.1 E **4 Claims**

1. An α-substituted phenyl-β-sulfosuccinic acid having the general formula:



or the alkali metal, ammonium and substituted ammonium salt forms thereof wherein the substituted ammonium salts are selected from the group consisting of monoethanolammonium, diethanolammonium, triethanolammonium, methylammonium, dimethylammonium, trimethylammonium, tetramethylammonium, morpholinium, N-methylmonoethanolammonium and N-ethylmonoethanolammonium salts thereof, wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl containing 1 to 4 carbon atoms and COOH providing that when COOH is present two of the R_1, R_2 and R_3 group must be hydrogen.

3,968,111

8,8-DISUBSTITUTED-6-METHYLERGOLINES AND RELATED COMPOUNDS

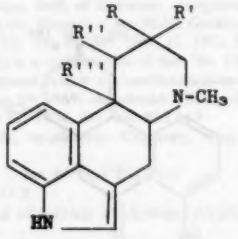
Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 6, 1974, Ser. No. 530,320

Int. Cl.² C07D *457/02, 457/10*

U.S. Cl. 260—285.5 **9 Claims**

1. A compound of the formula



wherein R is alk, carbo(C_1–C_3)alkoxy, Cl or Br;
R′ is carboxyl, carbo(C_1–C_3)alkoxy, or CH_2Z,
wherein alk is (C_1–C_3) alkyl and
Z is H, OH, CN, OSO_2alk, Y-phenyl or Y-alk;
wherein Y is S or O; and
R″ and R‴ when taken singly are H; and, when taken together with the carbon atoms to which they are attached, form a double bond and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids.

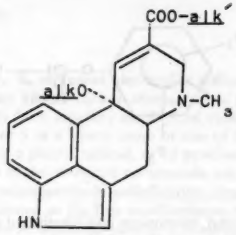
3,968,112

SYNTHESIS OF PENNICLAVINE AND ELYMOCLAVINE

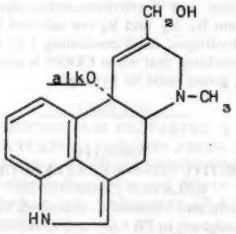
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 494,147, Aug. 2, 1974, Pat. No. 3,929,796. This application Aug. 11, 1975, Ser. No. 603,408
Int. Cl.² C07D *457/12*
U.S. Cl. 260—285.5 **1 Claim**

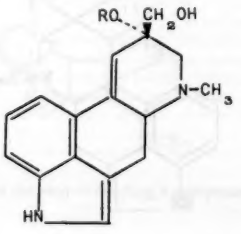
1. The process which comprises reducing with a metal hydride in an inert solvent a compound of the formula



wherein alk and alk′ are the same or different (C_1–C_3) alkyl groups to yield an 8-hydroxymethyl-8-ergolene of the formula



wherein alk has the same meaning as hereinabove; rearranging said 8-hydroxymethyl-8-ergolene in aqueous acid, in an alkanolic (alkOH) acid or in an acidic (alkCOOH) medium to yield, respectively, penniclavine (R=H), an 8α-alkylpenniclavine ether (R=alk) or 8α-alkanoyl penniclavine ester (R=alk—CO) of the formula



wherein R is H, alk or alk-CO, and alk is (C_1–C_3) alkyl.

3,968,113

CONVERSION OF LEUROSINE TO VINCATHICINE

Norbert Neuss, and Susan S. Tafur, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 7, 1975, Ser. No. 547,895
Int. Cl.² C07D *215/14*
U.S. Cl. 260—287 P **4 Claims**

1. The process which comprises the essential steps of heating leurosine with mineral acid in an aqueous solvent and isolating the vincathicine thus formed.

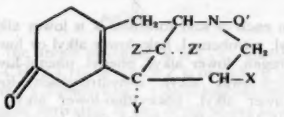
3,968,114

1,2,3,4,5,6,7,8,9,10-DECAHYDRO-8-OXO-2,6-METHANO-3-BENZAZOCINES

Noel F. Albertson, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,966
Int. Cl.² C07D *221/26*
U.S. Cl. 260—293.54 **6 Claims**

1. 1,2,3,4,5,6,7,8,9,10-Decahydro-3-Q′-8-oxo-5-X-6-Y-11-Z-11Z′-2,6-methano-3-benzazocine having the formula



wherein:
Q′ is hydrogen, benzyl, propyl, isobutyl, neopentyl, allyl, 2-methyl-2-propenyl, 2-chloro-2-propenyl, cis-3-chloro-2-propenyl, cis-3-chloro-2-butenyl, trans-3-chloro-2-butenyl, propargyl, cyclopropylmethyl or (2,2-dichlorocyclopropyl)methyl;
X is hydrogen, methyl or ethyl;
Y is hydrogen, methyl, ethyl, propyl, allyl or phenyl;
Z is hydrogen, methyl, ethyl or hydroxy, and
Z′ is hydrogen, methyl or ethyl; or an acid addition salt thereof.

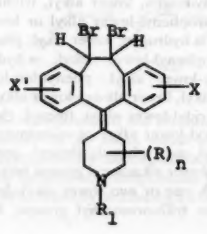
3,968,115

1-ALKYL-4-(10 AND/OR 11)-BROMO-10,11-DIHYDRO-5H-DIBENZO[a,d]-CYCLOHEPTEN-5-YLIDENE PIPERIDINE COMPOUNDS

John D. Prugh, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 9,049, Feb. 5, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,684
Int. Cl.² C07D *211/08*
U.S. Cl. 260—293.62 **5 Claims**

1. A compound of the formula



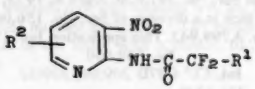
wherein
R_1 is lower alkyl;
R is methyl or ethyl;
n is 0, 1 or 2;
X and X′ are similar or dissimilar and are selected from hydrogen, an alkyl group having up to 6 carbon atoms, a perfluoroalkyl group having up to 4 carbon atoms, phenyl, amino,
an alkylamino group having up to 4 carbon atoms, a dialkylamino group having up to 8 carbon atoms, an alkylsulfonylamino group having up to 4 carbon atoms, halogen (fluorine, chlorine, bromine or iodine), hydroxyl,
an alkoxy group having up to 4 carbon atoms,
a perfluoroalkoxyl group having up to 4 carbon atoms,
cyano,
carboxy,
carbamoyl,
an alkylcarbamoyl group having up to 5 carbon atoms, a dialkylcarbamoyl group having up to 9 carbon atoms, a carbalkoxy group having up to 6 carbon atoms, an alkylmercapto group having up to 4 carbon atoms, a perfluoroalkylmercapto group having up to 4 carbon atoms, an alkylsulfonyl group having up to 4 carbon atoms, a perfluoroalkylsulfonyl group having up to 4 carbon atoms, sulfamoyl,
an alkylsulfamoyl group having up to 4 carbon atoms, or a dialkylsulfamoyl group having up to 8 carbon atoms.

3,968,116
1H-IMIDAZO(4,5-B)PYRIDINE COMPOUNDS

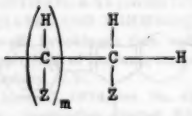
George O. P. Doherty, Greenfield, Ind., and Kenneth H. Fuhr, Columbus, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 181,574, Sept. 17, 1971, Pat. No. 3,813,408, Continuation-in-part of Ser. No. 21,535, March 20, 1970, abandoned. This application Feb. 15, 1974, Ser. No. 442,943
Int. Cl.² C07D *213/75*
U.S. Cl. 260—295 AM 8 Claims

1. The compound of the formula



wherein R^1 represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of C_1–C_4, or radical of the formula



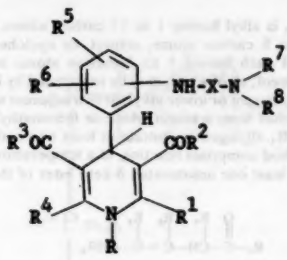
wherein each Z independently represents hydrogen or halogen and *m* represents 0 or 1; R^2 represents amino, halogen, nitro, cyano, loweralkyl of C_1-C_4, perfluoroalkyl of C_1-C_4, $-CF_2Cl$, $-CF_2H$, or loweralkylsulfonyl of C_1-C_4.

3,968,117
1,4-DIHYDROPYRIDINES

Friedrich Bossert; Horst Meyer, both of Wuppertal-Elberfeld, and Wulf Vater, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 366,578, June 4, 1973, Pat. No. 3,928,818. This application Feb. 10, 1975, Ser. No. 548,521
Claims priority, application Germany, June 10, 1972, 2228363
Int. Cl.² C07D *213/24*
U.S. Cl. 260—295.5 R 6 Claims

1. A compound of the formula:



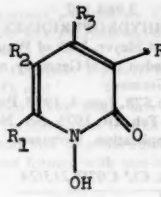
wherein
R is hydrogen, lower alkyl or alkenyl of 2 to 4 carbon atoms:
each of R^1 and R^4 is hydrogen or lower alkyl;
each of R^2 and R^3 is lower alkyl, alkenyl of 2 to 4 carbon atoms, furfuryl or a member selected from the group consisting of lower alkoxy, alkenyloxy of 2 to 4 carbon atoms and alkynyloxy of 2 to 4 carbon atoms which is unsubstituted or substituted by hydroxy or lower alkoxy;
each of R^5 and R^6 is hydrogen, lower alkyl, lower alkoxy, nitro, halogeno, cyano, amino, lower alkylamino, di-(lower alkyl)amino or acetylamino;
R^7 and R^8 are each hydrogen or lower alkyl; and
X is lower alkylene or hydroxy-(lower alkylene); or a non-toxic pharmaceutically acceptable acid addition salt thereof.

3,968,118
PROCESS FOR THE MANUFACTURE OF 1-HYDROXY-2-PYRIDONES

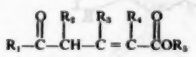
Gerhard Lohaus, Kelkheim, Taunus, and Walter Dittmar, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 317,837, Nov. 22, 1972, Pat. No. 3,883,545, which is a continuation of Ser. No. 199,320, Nov. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 851,428, Aug. 19, 1969, abandoned. This application Aug. 30, 1974, Ser. No. 502,063
Claims priority, application Germany, Aug. 31, 1968, 1795270
Int. Cl.² C07D *213/02*
U.S. Cl. 260—297 Z 7 Claims

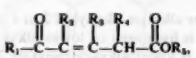
1. The method of making a 1-hydroxy-2-pyridone of the formula



wherein R_1 is alkyl having 1 to 17 carbon atoms, cycloalkyl having 5 to 8 carbon atoms, α-furyl, or cyclohexylalkyl or phenylalkyl each having 1 to 3 carbon atoms in the alkyl portion thereof, all of which may be substituted by halogen; R_2 to R_4 are hydrogen or lower alkyl, or two adjacent substituents taken together form a trimethylene or tetramethylene chain; and R_1 to R_4 all together contain at least two carbon atoms, which method comprises reacting, at a temperature from 0°to 150°C., at least one unsaturated δ-keto ester of the formula



or defined



wherein R_1 to R_4 are as earlier defined and R_5 is lower alkyl, with hydroxylamine or an acid addition salt thereof.

3,968,119

VIC-TRIAZOLE COMPOUNDS

Horst Harnisch, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

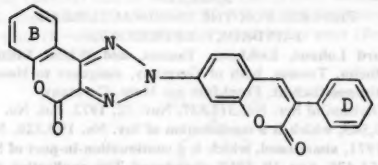
Filed Jan. 4, 1974, Ser. No. 430,931

Claims priority, application Germany, Jan. 5, 1973, 2300488

Int. Cl.² C07D *487/04, 491/04*

U.S. Cl. 260—308 A **1 Claim**

1. Vic-triazole compound of the formula



wherein

B is unsubstituted; substituted by a fused unsubstituted benzene ring; monosubstituted by fluoro, chloro, bromo, C_1-C_4-alkyl or C_1-C_4-alkoxy; or disubstituted by fluoro, chloro, or bromo; and D is unsubstituted or monosubstituted by C_1-C_4-alkyl, fluoro, chloro, bromo, cyano, carboxylic acid C_1-C_4-alkyl ester, or carboxylic acid amide.

3,968,120

2-IMIDAZOLYLCARBONYLBENZOIC ACID COMPOUNDS

Erik Regel, Wuppertal-Elberfeld; Klaus Lürssen, Koenigsdorf, and Karl Heinz Büchel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

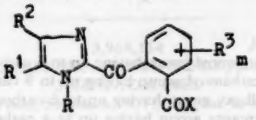
Filed Sept. 11, 1972, Ser. No. 288,229

Claims priority, application Germany, Sept. 10, 1971, 2145456

Int. Cl.² C07D *233/64*

U.S. Cl. 260—309 **17 Claims**

1. 2-Imidazolylcarbonylbenzoic acid compound of the formula:



(I)

in which

X is hydroxy or OX′, X′ being

a. an alkali metal cation,

b. an equivalent of an alkaline earth metal cation or an equivalent of a metal cation selected from the group consisting of iron, copper, manganese and zinc, or

c. alkyl of from 1 to 10 carbon atoms, alkenyl of from 2 to 6 carbon atoms, alkynyl of from 2 to 6 carbon atoms, haloalkyl of from 1 to 3 carbon atoms and 2 to 5 halogen atoms, hydroxyalkyl of from 1 to 4 carbon atoms, alkoxyalkyl of from 1 to 4 carbon atoms in the alkylene moiety and 1 to 3 carbon atoms in the alkoxy moiety, or aralkyl of from 1 to 2 carbon atoms in the alkylene moiety and 6 to 10 carbon atoms in the aryl moiety;

R is hydrogen or alkyl or alkoxyalkyl each of no more than 4 carbon atoms;

R^1 and R^2 are individually hydrogen, alkyl with up to 4 carbon atoms or phenyl; and

R^1 and R^2 together with the two carbon atoms to which they are attached form a fused benzene ring;

m is 1 or 2; and

R^3 is hydrogen, alkyl of from 1 to 4 carbon atoms, nitro or halogen;

or an agriculturally acceptable salt thereof.

3,968,121

1,2-DIPHENYL-4,5,6,7-TETRAHYDROINDOLES

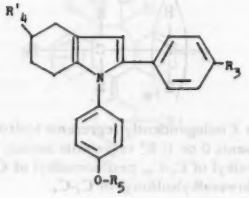
Malcolm R. Bell, East Greenbush, and Andrew W. Zalay, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 347,620, April 4, 1973, Pat. No. 3,898,246, which is a division of Ser. No. 156,068, June 23, 1971, Pat. No. 3,799,943. This application Jan. 13, 1975, Ser. No. 540,550

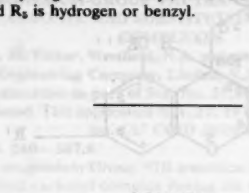
Int. Cl.² C07D *209/08, 209/12*

U.S. Cl. 260—326.13 R **7 Claims**

1. A compound of the formula



where R_3 is hydrogen, lower-alkyl, lower-alkoxy or halo; R'_4 is hydrogen, lower-alkyl, lower-alkoxy or benzoyloxy; and R_5 is hydrogen or benzyl.



3,968,122

1-ACETYL-3-N-OCTANOYL-5-ETHYLIDENE TETRAMINIC ACIDS AND METAL SALTS THEREOF

Julia Nazareth; Naren M. Gandhi; Pandurang V. Divekar; Noel J. de Souza, and Hans Kohl, all of Bombay, India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

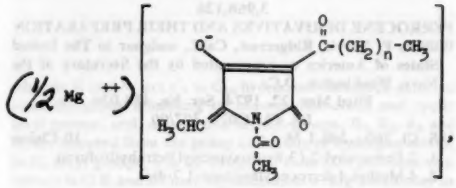
Filed Aug. 15, 1974, Ser. No. 497,719

Claims priority, application Germany, Oct. 19, 1973, 2352448

Int. Cl.² C07D *207/00, 207/12, 207/24*

U.S. Cl. 260—326.5 FL **7 Claims**

1. Magnesidin, which is a mixture of compounds of the formula



said mixture consisting essentially of about equivalent amounts of a compound wherein *n* of said formula is 4 and of a compound wherein *n* of said formula is 6, the corresponding magnesium-free mixture having an —OH group in the 4-position, and salts of the latter with a mono-, di-, tri-, or tetravalent cation.

3,968,123

(3-THIOXO-1,2-DITHIOL-4-YL) SUBSTITUTED TRIARYL PHOSPHATES AND THIOPHOSPHATES

John Grey Dingwall, Brooklands Sale, and Donald Richard Randell, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

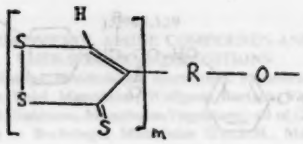
Filed June 17, 1974, Ser. No. 479,937

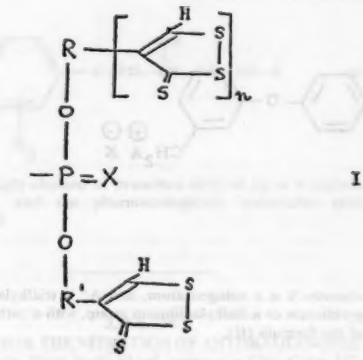
Claims priority, application United Kingdom, June 19, 1973, 29161/73

Int. Cl.² C07D *339/04*

U.S. Cl. 260—327 C **31 Claims**

1. A compound of the formula:





I

in which X is an oxygen or sulphur atom, R is phenyl or phenylene and R^1 is phenylene both R and R^1 being unsubstituted or substituted by 1 to 3 branched or straight chain alkyl groups which may be the same or different and may contain 1 to 12 carbon atoms and in which *m* and *n* may be 0 or 1.

3,968,124

PROCESS FOR PREPARING PHENYL-ACETIC ACID ESTERS

Toshio Mizutani; Nobuo Ohno; Yoshitaka Ume, all of Toyonaka, and Takashi Matsuo, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

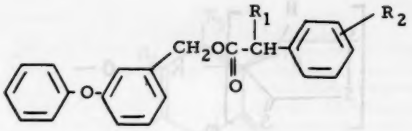
Filed Aug. 6, 1974, Ser. No. 495,155

Claims priority, application Japan, Aug. 28, 1973, 48-97063

Int. Cl.² C07C *67/00;* **C07D** *317/68;* **C07C** *67/18*

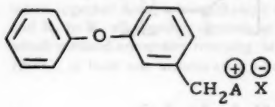
U.S. Cl. 260—340.5 **9 Claims**

1. A process for preparing a substituted phenyl-acetic acid ester of the formula (I),



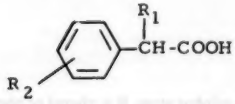
(I)

wherein R_1 is an ethyl group or an isopropyl group, R_2 is a hydrogen atom, a C_1–C_4 alkyl group, a methoxy group, a halogen atom or a methylenedioxy group, which comprises reacting in the presence of a solvent a quaternary ammonium salt of the formula (III),



(III)

wherein X is a halogen atom, and A^+ is trialkylammonium, pyridinium or a dialkylanilinium group, with a carboxylic acid of the formula (II),



(II)

wherein R_1 and R_2 are each as defined above, its reactive derivative, or mixture of the acid and its reactive derivative, said reactive derivative of said carboxylic acid being a member selected from the group consisting of the alkali metal salt, the ammonium salt and the alkyl ammonium salt.

3,968,125

DIHYDROXYHEXAHYDRODIBENZO[b,d]PYRANS

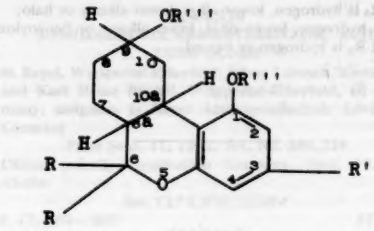
Robert A. Archer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1973, Ser. No. 413,010

Int. Cl.² C07D *311/78, 311/76*

U.S. Cl. 260—345.3 **5 Claims**

1. A compound of the formula



wherein R' is

wherein R'' is C_1–C_7 alkyl, R^e is H or methyl, each R''' is individually hydrogen or C_1–C_4 alkanoyl, and wherein both R's are the same and can be hydrogen or methyl.

3,968,126

FERROCENE DERIVATIVES AND THEIR PREPARATION

William P. Norris, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1974, Ser. No. 454,036

Int. Cl.² C07D *307/00*

U.S. Cl. 260—346.1 M **10 Claims**

1. 2-Ferrocenyl-2-(3-hydroxypropyl)tetrahydrofuran.

2. 4-Methyl-4-ferrocenylheptane-1,7-diol.

3,968,127

HYDROCARBON OXIDATION PROCESS

Jonas P. Harrison, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 24, 1975, Ser. No. 571,183

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 A **10 Claims**

1. A process for producing citraconic anhydride from isoprene which comprises contacting the isoprene feed and oxygen-containing gas in vapor phase in a pretreatment zone at a temperature between 150° and 430°C with a solid base composition, said base composition consisting essentially of an alkali or alkaline earth metal, and then contacting the effluent from the pretreatment zone at a temperature between 180° and 500°C with a hydrocarbon oxidation catalyst effective for catalyzing the reaction of isoprene with oxygen to obtain citraconic anhydride, wherein the hydrocarbon oxidation catalyst consists essentially of an oxide of vanadium, chromium, molybdenum, or a mixed oxide of tin and antimony, vanadium and chromium, tin and molybdenum, molybdenum and phosphorus, vanadium and phosphorus, vanadium and arsenic, or vanadium and titanium, and wherein the base composition and hydrocarbon catalyst are discrete catalyst beds.

3,968,128
MAGNESIUM-GROUP VIII TRANSITION METAL CARBONYL AND SUBSTITUTED CARBONYL COMPLEXES

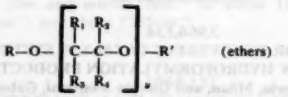
Gary B. McVicker, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 51,669, July 1, 1970, abandoned. This application Nov. 27, 1973, Ser. No. 419,367
Int. Cl.[2] C07D *307/04*
U.S. Cl. 260—347.8 7 Claims

1. A magnesium Group VIII transition metal carbonyl and substituted carbonyl complex having the following formula:

$$B_yMe[Me'(CO)_a(L)_b]_2$$

wherein B is a Lewis base selected from the group consisting of ether and ketones represented by the general formulae:



(ethers)

and

(ketones)

wherein R and R′ are C_1 to C_{10} hydrocarbon radicals selected from the group consisting of normal, branched, and cyclic alkyl groups, aryl, alkaryl and aralkyl groups; R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen and C_1 to C_4 alkyl groups; *y* is an integer of from 0–3 provided that when *y* is O R and R′ may together form a ring which may or may not include oxygen; *x* is a positive integer from 1 to 4; Me is magnesium; Me′ is a transition metal selected from the group consisting of the metals of Group VIII of the Periodic Table of the Elements; *a* is an integer ranging from 1 to 4, *b* is an integer ranging from 0 to 3, and *a*+*b* total 4 or less; and L is a uni-or polydentate ligand or hydrocarbon residue which is selected from the group consisting of compounds of the following general formula:

and

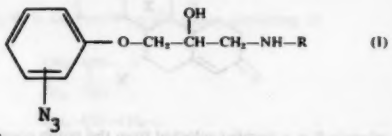
wherein R, R_1, R_2 and R_3 are radicals independently selected from the group consisting of hydrogen, C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl, C_6 to C_{20} aryl, C_7 to C_{20} aralkyl and alkaryl, and X is selected from the group consisting of N, P, As and Sb.

3,968,129
AZIDOPHENOL AMINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Wolfgang Kampe, Heddesheim; Kurt Stach, Mannheim-Waldhof; Max Thiel, Mannheim; Wolfgang Bartsch, Viernheim, and Karl Dietmann, Mannheim-Vogelstang, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Filed Jan. 28, 1975, Ser. No. 544,720
Claims priority, application Germany, Feb. 22, 1974, 2408522
Int. Cl.[2] C07C *117/00*
U.S. Cl. 260—349 6 Claims

1. Azidophenol amine compound of the formula:



(I)

wherein

R is straight-chained or branched alkyl of up to 6 carbon atoms; and the pharmacologically acceptable salts thereof.

3,968,130
PROCESS FOR THE NITRATION OF ANTHRAQUINONES

Istvan Székely, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 25, 1972, Ser. No. 300,689
Claims priority, application Switzerland, Oct. 26, 1971, 15542/71; Mar. 16, 1972, 3938/72
Int. Cl.[2] C07C *79/37*
U.S. Cl. 260—369 2 Claims

1. A process for the manufacture of anthraquinone which is mono-nitrated in α-position, wherein anthraquinone is nitrated with concentrated nitric acid, and wherein there are used 6 to 100 moles of nitric acid to 1 mole of anthraquinone, and wherein the nitration is carried out isothermically at a temperature of 40°C to 70°C.

3,968,131
MANUFACTURE OF 1-AMINO-2-ALKOXY-4-HYDROXYANTHRAQUINONES

Karl Maier, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 31, 1975, Ser. No. 545,840
Int. Cl.[2] C07C *97/26*
U.S. Cl. 260—380 10 Claims

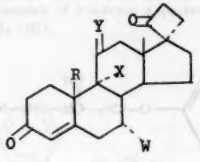
1. An improvement in the process for the manufacture of 1-amino-2-alkoxy-4-hydroxyanthraquinone by reaction of primary, saturated, linear or branched aliphatic alcohols, which may be substituted by a further 1 or 2 hydroxyl or alkoxy groups, by a phenoxy group, by one or two phenyl groups, by a carboxylic acid amide group or by a nitrile group, with 1-amino-2-phenoxy-4-hydroxyanthraquinone or 1-amino-2-methoxy-4-hydroxyanthraquinone in the presence of alkaline reagents and optionally in the presence of inert solvents at elevated temperatures, which improvement comprises carrying out the reaction in the presence of from 10 to 25% by weight, based on the anthraquinone compound to be converted, of polyethylene glycols of molecular weight 150 or above.

3,968,132
(17R)-SPIRO-[ANDROSTANE-17,1'-CYCLOBUTAN]-2'-ONES, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES USEFUL THEREIN

Michael J. Green, New Brunswick, and Ho-Jane Shue, Belleville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 23, 1974, Ser. No. 535,387
Int. Cl.² C07J 5/00
U.S. Cl. 260—397.3 **23 Claims**

1. A compound selected from the group consisting of a 3-oxo-4-androstene-17-spirocyclobutanone of the following formula I:



I

wherein R is a member selected from the group consisting of hydrogen and methyl; and

W is a member selected from the group consisting of hydrogen and acetylthio;

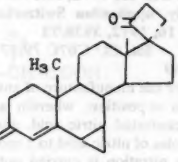
X and Y are both hydrogen, or X is fluorine and Y is (H,βOH) provided R is methyl;

the 1-dehydro analogs thereof when R is methyl;

the 6-dehydro analogs thereof when W is hydrogen;

the 1,6-bis-dehydro analogs thereof when R is methyl and W is hydrogen;

and a 3-oxo-4-androstene-17-spirocyclobutanone of the following formula II:



II

and the 1-dehydro analog thereof.

3,968,133
CARBOXYLATION PROCESS FOR PREPARING LINEAR FATTY ACIDS OR ESTERS

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,867
Int. Cl.² C11C 3/02
U.S. Cl. 260—410.9 R **6 Claims**

1. A process for preparing linear, carboxylic (fatty) acids and their ester derivatives through the catalytic reaction of alpha-olefins containing from about 3 to about 40 carbon atoms, carbon monoxide and hydroxyl-containing co-reactants by:

a. admixing each molar equivalent of alpha-olefin to be carboxylated with at least a stoichiometric amount of hydroxyl-containing co-reactant selected from the group consisting of water, alkanols, alkane diols, containing 1 to 12 carbon atoms, chloroalkanols containing 1 to 4 carbon atoms, and at least a catalyst amount of ligand-stabilized palladium(II) halide complex dispersed in quaternary ammonium, phosphonium and arsonium salts of trihalostannate(II) or trihalogermanate(II) selected from the group consisting of:

$[(C_2H_5)_4N][SnCl_3]$-$PdCl_2[P(p\text{-}CH_3\text{-}C_6H_4)_3]_2$
$[(C_2H_5)_4N][SnCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[ClCH_2(C_6H_5)_3P][SnCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[(n\text{-}C_4H_9)_4N][SnCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[(C_6H_5)_4As][SnCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[(C_7H_{15})_4N][SnCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[(C_2H_5)_4N][SnCl_3]$-$PdCl_2[P(p\text{-}CH_3O.C_6H_4)_3]_2$
$[(C_2H_5)_4N][SnCl_3]$-$PdCl_2[P(CH_3)_2C_6H_5]_2$
$[(C_2H_5)_4N][GeCl_3]$-$PdCl_2[P(C_6H_5)_3]_2$
$[(C_2H_5)_4N][GeCl_3]$-$PdCl_2[As(C_6H_5)_3]_2$

wherein the molar ratio of quaternary tin(II) or germanium(II) salt to palladium is between 2 to 10 to 1, in a substantially oxygen-free environment, in the present of at least a stoichiometric amount of carbon monoxide with respect to olefin, at superatmospheric pressures of carbon monoxide of at least 100 psig, to form a pressurized reaction mixture;

b. heating said reaction mixture at temperatures ranging from about 25° to 120°C for a time sufficient to substantially carboxylate said alpha-olefin to the corresponding carboxylic (fatty) acid or ester, and

c. isolating said carboxylated products prepared therein.

3,968,134
PROCESS FOR RECOVERING CATALYST SYSTEMS FROM RAW HYDROFORMYLATION PRODUCTS

Guglielmo Gregorio, Milan, and Giorgio Montrasi, Gabagnate Milanese (Milan), both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jan. 22, 1975, Ser. No. 543,151
Claims priority, application Italy, Jan. 23, 1974, 19691/74
Int. Cl.² C07F 15/00
U.S. Cl. 260—429 R **6 Claims**

1. A process for recovering complexes of rhodium and triphenylphosphine from the organic liquid comprised in raw hydroformylation products of olefins, or in tails resulting from distillation of said raw products, which comprises treating the organic liquid containing the complexes of rhodium and triphenylphosphine with an aqueous solution of an aldehyde having from 1 to 4 carbon atoms and of a strong mineral acid, in a molar ratio of from 1:1 to 1:3 with respect to the phosphine, at a temperature of from 60°C to 150°C, separating by filtration the solid rhodium complex which forms during the treatment with the aqueous aldehyde and acid solution, and separating the aqueous solution containing triphenylphosphine by decantation.

3,968,135
CHROMIUM SALT CATALYSTS

Roger B. Steele, Fair Oaks, and Arthur Katzakian, Jr., Sacramento, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 4,056, Jan. 19, 1970, abandoned. This application Aug. 17, 1973, Ser. No. 389,079
Int. Cl.² C07F 11/00
U.S. Cl. 260—438.5 R **14 Claims**

1. A novel catalyst for the preferential reaction of oxirane compounds with compounds containing at least one acidic proton, said catalyst comprising a CrIII tricarboxylate of the formula:

$$Cr(OOCR^a)_3$$

where $OOCR^a$ is a carboxylate group containing at least 4 carbon atoms, said catalyst being prepared by heating a hydrated CrIII tricarboxylate in an excess of organic acid to a temperature above 140°C to prepare a product of the following characteristics:

1. emerald green in color,

2. slightly soluble in hexane but freely soluble in acetone,

3. melts slightly above room temperature,

4. does not exhibit water absorption peak at 2750 mμ in the near infrared, and

5. at least 90% of the carboxylate carbonyl absorption is at 1615 cm^{-1} and not at 1540 cm^{-1}.

3,968,136

CATALYTIC PROCESS FOR POLYHYDRIC ALCOHOLS AND DERIVATIVES

Wellington E. Walker, Charleston, and Earle S. Brown, Jr., South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 12, 1974, Ser. No. 488,140
Int. Cl.² C07C 27/06
U.S. Cl. 260—449 L 5 Claims

1. The process of making alkane polyols which comprises reacting in a solvent selected from the group of gamma-butyrolactone and delta-valerolactone at a pressure of from about 500 psig to about 50,000 psig and a temperature of about 100°C. to about 375°C., a mixture consisting essentially of oxides of carbon and hydrogen in the presence of a rhodium carbonyl complex, said complex is provided to the reaction as a rhodium carbonyl cluster which possesses an infrared spectrum which exhibits three intense wavelength bands between about plus and minus 10cm^{-1} of about 1868cm^{-1}, about 1838cm^{-1}, and about 1785cm^{-1}.

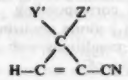
3,968,137

PERFLUORALKYLCYANOCYCLOPROPENES

Sam Andreades, and Richard L. Baird, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 77,724, Oct. 2, 1970, Pat. No. 3,919,227, which is a continuation-in-part of Ser. No. 832,841, June 12, 1969, abandoned. This application May 28, 1975, Ser. No. 581,565
Int. Cl.² C07C 120/00, 121/48
U.S. Cl. 260—464 6 Claims

1. A polymerizable compound of the formula



wherein Y′ and Z′, alike or different, are perfluoroalkyl groups of up to six carbon atoms.

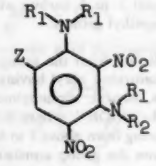
3,968,138

6-CYANO-2,4-DINITRO-1,3-PHENYLENEDIAMINES

Don L. Hunter, Anaheim; William G. Woods, Fullerton; James D. Stone, Whittier, all of Calif., and Cecil W. LeFevre, Franklin, Idaho, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Division of Ser. No. 86,386, Nov. 2, 1970, Pat. No. 3,910,783. This application Feb. 10, 1975, Ser. No. 549,243
Int. Cl.² C07C 121/78
U.S. Cl. 260—465 E 6 Claims

1. A compound of the formula



in which Z is cyano, each R_1 is selected from the group consisting of hydrogen, alkyl and alkenyl and R_2 is selected from the group consisting of alkyl and alkenyl, said alkyl and alkenyl groups having up to about six carbon atoms.

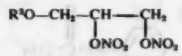
3,968,139

NITROGEN- AND FLUORINE-CONTAINING COMPOUNDS

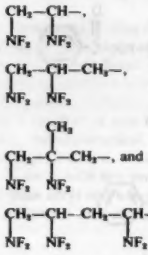
Samuel Franklin Reed, Jr., Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 30, 1962, Ser. No. 235,176
Int. Cl.² G07C 77/02
U.S. Cl. 260—467 10 Claims

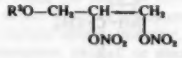
1. Compounds of the general formula



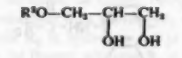
in which R^2 is selected from the group consisting of



6. A process for the preparation of compounds of the general formula



in which R^2 is as defined in claim 1, which comprises nitrating, with a mixture of sulfuric and nitric acids, diols of the general formula



in which R^2 is as defined in claim 1.

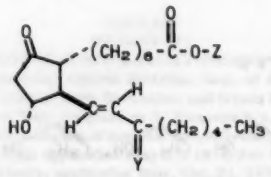
3,968,140

SUBSTITUTED ANILIDE ESTERS OF PGE₁

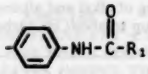
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 8, 1974, Ser. No. 431,599
Int. Cl.² C07C 133/08, 103/82
U.S. Cl. 260—468 D 10 Claims

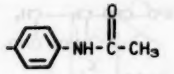
1. An optically active compound of the formula:

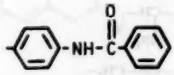


or a racemic compound of that formula and the mirror image thereof, wherein Z is

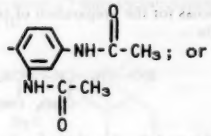
(1) 

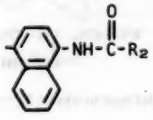
wherein R_1 is
$-CH_3$





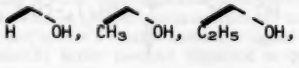
$-NH_2$
or

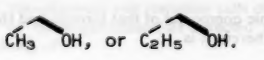
(2) 

(3) 

wherein R_2 is
$-CH_3$

or
$-NH_2$;
and wherein Y is





3,968,141

PROCESSES FOR STEREOSPECIFICALLY PREPARING CHIRAL 2-SUBSTITUTED-4-HYDROXY-2-CYCLOPENTEN-1-ONE

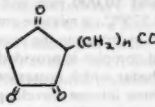
Charles J. Sih, Madison, and James B. Heather, Middleton, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 309,766, Nov. 27, 1972, abandoned. This application June 12, 1974, Ser. No. 478,713
Int. Cl.[2] C07C *51/00, 61/38*
U.S. Cl. 260—468 K 9 Claims

1. A method for preparing 2-substituted-4(R)-hydroxy-2-cyclopenten-1-one which comprises:

preparing 2-substituted-4(R)-hydroxy-cyclopentane-1,3-dione by a method selected from the group consisting of

a. catalytically hydrogenating a compound of the formula



where

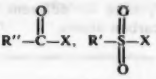
R is selected from the group consisting of a hydrocarbon radical containing from about 1 to 4 carbon atoms and benzyl and

n is an integer from about 1 to 12, the hydrocarbon chain represented by $(CH_2)_n$ being saturated or containing a cis double bond or triple bond at the 5–6 position in the equivalent acid side chain represented by $(CH_2)_nCOOH$ in the presence of a rhodium complex with a catalyst comprising a chiral phosphine ligand;

b. subjecting 2-substituted cyclopentane-1,3,4-trione or 2-substituted-3-alkoxy-2-cyclopentane-1,4-dione to the fermentative enzymatic action of a microorganism of the class Ascomycetes; and

c. resolving 2-(6′-carbomethoxyhexyl)-4-hydroxy-cyclopentane-1,3-dione with brucine

and recovering the corresponding 2-substituted-4-(R)-hydroxy-cyclopentane-1,3-dione enolizing the said dione by reacting it under basic conditions with compounds selected from the group consisting of



where X is selected from the group consisting of I, Cl, Br,

and $-OSO_2R'$ and

R′ is selected from the group consisting of pivaloyl, isobutyl, phenyl, benzyl, biphenyl, naphthyl, alkanyl and alkenyl having from about 1 to 6 carbon atoms, and halogen-, biphenyl and naphthyl groups.

and R″X

where R″ is selected from the group consisting of saturated and unsaturated alkyl having from about 1 to 6 carbon atoms, benzyl, diphenylmethyl, CH_2COOR''' and R‴—CH—COOR‴ where R‴ is a hydrocarbon radical containing from about 1 to 6 carbon atoms, and

X is selected from the group consisting of Cl, Br, I, sulfate, isocyanate, aryl sulfonate and alkyl-substituted aryl sulfonate radicals

to preferentially promote acylation or alkylation of the oxygen atom at the C-1 position of the dione

recovering the substituted C-1 enol

reducing the said substituted C-1 enol with a hydride reducing agent and recovering 2-substituted-4(R)-hydroxy-2-cyclopenten-1-one from the reduction reaction mixture.

3,968,142

HYDRONAPHTHALENE CARBOXYLIC ACIDS AND DERIVATIVES

Dieter Beck, Basel; Karl Schenker, Binningen, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

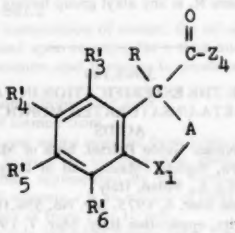
Filed Oct. 7, 1969, Ser. No. 864,543

Claims priority, application Switzerland, Oct. 16, 1968, 15455/68; July 3, 1969, 10201/69; Sept. 2, 1969, 13261/69

Int. Cl.² C07C *69/95*

U.S. Cl. 260—469 **19 Claims**

1. A member selected from the group consisting of the formula



in which Z_4 stands for a member selected from the group consisting of hydroxy and lower alkoxy, R stands for a member selected from the group consisting of hydrogen and lower alkyl, X_1 stands for a member selected from the group consisting of carbonyl and methylene, A stands for 1,2-ethylene R_3' and R_4' each stands for hydrogen, either of the radicals R_4' and R_5' stands for a member selected from the group consisting of lower cycloalkyl and lower cycloalkenyl, and the other one of the radicals R_4' and R_5' stands for a member selected from the group consisting of hydrogen, halogen and trifluoromethyl, and a pharmaceutically acceptable, nontoxic salt thereof.

3,968,143

PHENOXYPROPIONIC ACID DERIVATIVES

Erich Schacht; Günter Lauterbach; Werner Mehrhof; Herbert Nowak, and Zdenek Simane, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

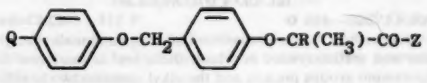
Filed Aug. 14, 1974, Ser. No. 497,300

Claims priority, application Germany, Aug. 21, 1973, 2342118

Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 G **23 Claims**

1. A phenoxypropionic acid derivative of the formula



wherein Q is H or halogen, R is H or CH_3, Z is —OH or —OR_1, and R_1 is alkyl of 1–4 carbon atoms or 1-methyl-4-piperidyl, and the physiologically acceptable salts thereof.

3,968,144

5-OXA-11-DEOXY PHENYL- AND PHENOXY-SUBSTITUTED PROSTALANDIN E_1 ANALOGS

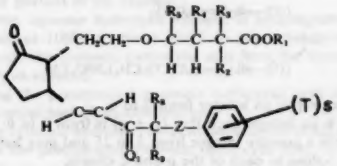
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 361,990, May 21, 1973, Pat. No. 3,864,387. This application Nov. 18, 1974, Ser. No. 524,959

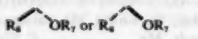
Int. Cl.² C07C *69/27*

U.S. Cl. 260—473 A **17 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive, between —CR_8R_9— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_{10}, wherein R_{10} is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and *s* is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when *s* is 2 or 3 the T's are either the same or different; wherein Q_1 is



wherein R_6 and R_7 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein when Z is oxa (—O—), R_8 and R_9 are hydrogen or alkyl of one to 4 carbon atoms, being the same or different, and, when Z is C_jH_{2j}, R_8 and R_9 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that R_9 is fluoro only when R_8 is hydrogen or fluoro; wherein R_3 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro; wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,968,145

METHYL 2(1 CHLORONAPHTH-2-YLOXY)PROPIONATE

Mario Ghelardoni; Vittorio Pestellini, both of Florence; Giovanna Volterra, Sesto Fiorentino, and Nicola Pisanti, Florence, all of Italy, assignors to A. Menarini S.A.S., Italy

Continuation-in-part of Ser. No. 297,832, Oct. 16, 1972, abandoned. This application May 13, 1974, Ser. No. 469,552

Claims priority, application Italy, Oct. 21, 1971, 9731/71

Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 F **1 Claim**

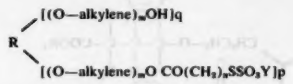
1. Methyl 2(1-chloronaphth-2-yloxy) propionate.

3,968,146
ESTERS OF SULFOTHIO ALKANOIC ACIDS

David Malcolm Lewis, Otley, England, assignor to I.W.S. Nominee Company Limited, London, England

Filed Dec. 5, 1972, Ser. No. 312,356
Claims priority, application United Kingdom, Dec. 9, 1971, 57313/71; Feb. 7, 1972, 5643/72
Int. Cl.² C07C *161/05*
U.S. Cl. 260—481 R 8 Claims

1. A curable compound having the formula:



wherein p is an integer from 2 to 6;
q is an integer such that (p + q) is from 2 to 6;
m is a positive integer from 5 to 25 and may have different values in each of the p and q chains;
n is an integer from 1–5;
R represents a radical formed by removal of the hydroxyl groups from an aliphatic alcohol containing at least 2 carbon atoms:
each 'alkylene' group comprises a chain of 2 to 6 carbon atoms between consecutive oxygen atoms; and
Y represents a hydrogen atom or a salt forming ion or group.

3,968,147
ASYMMETRIC REDUCTION OF KETONES TO FORM OPTICALLY ACTIVE ALCOHOLS

Arthur John Solodar, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 224,971, Feb. 9, 1972, Pat. No. 3,883,580. This application Oct. 29, 1974, Ser. No. 518,304
Int. Cl.² C07C *125/04, 29/16*
U.S. Cl. 260—482 C 21 Claims

1. A process for preparing an optically active secondary alcohol comprising reacting an optically inactive ketone having no asymmetric atoms of the formula

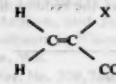
where R is different from R'; and where both Rs can be any substituted or unsubstituted monovalent hydrocarbon group attached directly to the carbonyl group through a carbon atom, with hydrogen in the presence of an optically active catalyst whch is a coordination complex comprising
a. a Group VIII metal having an atomic number greater than 43, in combination with
b. at least one optically active phosphine or arsine ligand wherein the optical activity of the ligand is contained in one or more groups attached to the phosphine or arsine atom.

3,968,148
COPOLYMERS OF 1-ALKENES AND ACRYLIC ACID DERIVATIVES

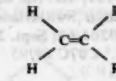
Norman A. Leister, Huntingdon Valley, and Richard J. Piccolini, Newtown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 13, 1971, Ser. No. 180,142
Int. Cl.² C07G *69/54*
U.S. Cl. 260—486 R 3 Claims

1. An oligomer of
a. about 10 to about 90 weight percent of a 1-alkene, or of a mixture of 1-alkenes, all having 4 to 32 carbon atoms;
b. about 1 to aout 35% of a compound or compounds having the formula:



wherein X is hydrogen or a methyl group, and R is a straight or branched chain alkyl group having 8 to 34 carbon atoms, and;
c. 1 to about 35% of a compound or compounds having the formula:



wherein R_2 is hydrogen or a methyl group, and R_3 is $(CH_2-)_nX$, wherein n is an integer ranging in value from 0 to 8, and X is CO_2R_4 where R_4 is any alkyl group having 1 to 4 carbon atoms.

3,968,149
PROCESS FOR THE ESTERIFICATION IN VAPOR PHASE OF ALPHA, BETA-UNSATURATED MONOCARBOXYLIC ACIDS

Luciano Moreschini; Guido Petrini, both of Milan, and Leonardo Dalloro, Bollate (Milan), all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Mar. 6, 1975, Ser. No. 556,160
Claims priority, application Italy, Mar. 7, 1974, 49121/74
Int. Cl.² C07C *69/54*
U.S. Cl. 260—486 R 9 Claims

1. A process for producing esters of alpha, beta-unsaturated monocarboxylic acids using as one reactant the raw acid having a high water content, which comprises reacting the acid with primary aliphatic alcohols containing from 1 to 8 carbon atoms, in the vapor phase, at a temperature of from 150°C to 350°C, and in the presence of a catalytic composition containing oxygen and tungsten as the essential catalyst-forming elements and, optionally, at least one of the elements lithium, sodium, potassium, rubidium and cesium, said elements being present in the catalyst in quantities such that the atomic ratios correspond to the empirical formula:

$$W_{12}O_xMe_z$$

wherein
Me is one or more of the elements Li, Na, K, Rb and Cs;
x is zero or a positive from 0,1 to 10; and
z is a number which satisfies the mean valencies of the elements in the oxidation state in which they exist in the catalytic combination.

3,968,150
PROCESS FOR THE PREPARATION OF NITROGEN- AND FLUORINE-CONTAINING ACRYLATES AND METHACRYLATES

Samuel F. Reed, Jr., Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 13, 1964, Ser. No. 360,168
Int. Cl.² C07C *69/54*
U.S. Cl. 260—486 D 12 Claims

1. A method for the preparation of difluoraminoalkyl acrylates and methacrylates in which there are at least two difluoramino groups present and the alkyl contains two to eighteen carbon atoms which comprises reacting in the temperature range of about 0° C. up to the reflux temperature of the reaction mixture a member from the class consisting of a difluoraminoalkyl α,β-dibromopropionate and di-

fluoraminoalkyl α,β-dibromoisobutyrate in the presence of a compound having the formula

wherein R is a member from the group consisting of alkoxy one to four carbon atoms, alkyl one to eight carbon atoms, phenyl, alkylphenyl in which the alkyl portion contains from one to eight carbon atoms, phenoxy and alkylphenoxy in which the alkyl portion contains from one to eight carbon atoms.

3,968,151

ASHLESS DISPERSANT PRODUCTS AND PROCESS

Sidney Schiff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 503,946, Sept. 6, 1974, Pat. No. 3,919,094. This application May 12, 1975, Ser. No. 576,939

Int. Cl.² C07C *87/123, 87/20, 109/08, 145/02*

U.S. Cl. 260—501.2 **10 Claims**

1. As a new composition of matter, the oil-soluble reaction product obtained upon reacting for a time and under conditions of temperature and pressure to produce said reaction product

a. a petroleum sulfonic acid with

b. an adduct formed from

1. at least one amine selected from primary monoamines having from 2 to 10, inclusive, carbon atoms, and polyamines represented by the formula $H_2N[(CH_2)_x NH]_yH$ wherein x is an integer of from 2 to 6 and y is an integer of from 1 to 10 and

2. at least one aldehyde having from 2 to 12, inclusive, carbon atoms.

7. A process for the preparation of a lubricating oil and gasoline additive which comprises

a. contacting at least one aldehyde having from 2 to 12, inclusive, carbon atoms with at least one amine selected from primary monoamines having from 2 to 10, inclusive, carbon atoms, and polyamines represented by the formula $H_2N[(CH_2)_x NH]_yH$ wherein X is an integer of from 2 to 6 and y is an integer of from 1 to 10, under conditions of a temperature and pressure and for a time sufficient to produce an aldehyde/amine adduct of said compounds, the molar ratio of aldehyde to amine present during said contacting being about 1/1 to about 2/1, and

b. interreacting at a temperature and pressure and for a time sufficient to produce said additive said adduct obtained in step (a) with a petroleum sulfonic acid wherein the amounts of reactants present during said reacting are from 1/1 to 5/1 equivalents of petroleum sulfonic acid per mole of amine used to prepare said adduct.

3,968,152

PRODUCTION OF AROMATIC CARBOXYLIC ACIDS

Morgan C. Sze, Upper Montclair; Daniel H. Gold, Plainfield, and Richard T. Whitehead, Westfield, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 295,512, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 713,931, March 18, 1968, abandoned. This application Jan. 31, 1975, Ser. No. 545,793

Int. Cl.² C07C *63/24, 63/26*

U.S. Cl. 260—515 P **10 Claims**

1. A continuous process for the production of an aromatic carboxylic acid by hydrolysis of its corresponding aromatic nitrile, comprising:

continuously introducing an aqueous slurry, containing the aromatic nitrile, water and a minor amount of a catalyst is at least one member selected from the group consisting of hydroxides and carbonates of the alkali and alkaline earth metals and the alkali, alkaline earth and ammonium salts of aromatic carboxylic acids, into an upper portion of a reactor;

maintaining the slurry at a temperature of from 300°F to 600°F for a period of from 1 to 10 hours, while continuously simultaneously stripping ammonia from the aqueous reaction mixture by continuously introducing steam into a lower portion of the reactor;

continuously removing ammonia as overhead from the reactor;

continuously removing an aqueous hydrolysis effluent from a lower portion of the reactor;

cooling the aqueous hydrolysis effluent to temperature of from about 100°F to about 300°F to precipitate essentially only the aromatic carboxylic acid from the aqueous hydrolysis effluent;

separating the precipitated aromatic carboxylic acid from the aqueous hydrolysis effluent; and

recycling aqueous hydrolysis effluent, subsequent to separation of the precipitated aromatic carboxylic acid, to the reactor.

3,968,153

EXTRACTION OF ACRYLIC ACID AND/OR METHACRYLIC ACID WITH A SOLVENT MIXTURE OF METHYLETHYLKETONE AND XYLENE OR ETHYLBENZENE

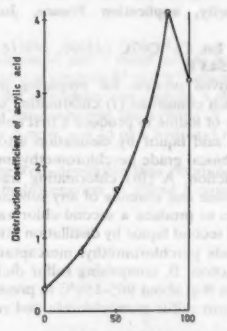
Tetsuya Ohrui, Niihama; Yasuhito Sakakibara, Saijo; Yukinaga Aono, Niihama; Michio Kato, Niihama; Hiroshi Takao, Niihama, and Masami Ayano, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed May 10, 1973, Ser. No. 358,997

Claims priority, application Japan, May 23, 1972, 47-51396

Int. Cl.² C07C *57/00*

U.S. Cl. 260—526 N **9 Claims**



1. A method for the extraction of acrylic acid from a solution containing the same which comprises treating said solution with a solvent mixture of methylethylketone and at least one member selected from the group consisting of o-xylene, m-xylene, p-xylene and ethylbenzene wherein the concentration of the methylethylketone is from about 80 to 95% by weight at room temperature to transfer acrylic acid from said solution into the solvent mixture, the amount of the solvent mixture being 0.1 to 10 parts by weight to 1 part by weight of said solution.

3,968,154

METHOD OF PRODUCING PENICILLAMINE

Manfred Klaus Joachim Bock, deceased, late of Berlin-Dahlem, Germany (by Ingrid Alida Anni Bock, heiress), assignor to Firma Heyl & Co. Chemisch-Pharmazeutische Fabrik, Berlin, Germany

Continuation-in-part of Ser. No. 236,962, March 22, 1972, Pat. No. 3,894,067. This application Oct. 29, 1974, Ser. No. 518,872

Claims priority, application Germany, Mar. 24, 1971, 2114329

Int. Cl.² C07C *149/243*

U.S. Cl. 260—534 S 9 Claims

1. Method of producing penicillamine, which comprises reacting a compound selected from the group consisting of penicilloic acid and penilloic acid with a mercuric salt in a mol ratio of 1:0.3 – 1:0.7 in a medium of at least one water miscible organic solvent and water in a ratio of organic solvent to water of between about 1:3 and 3:1, thereby forming penicillamine-mercuric-mercaptide in crystalline form which precipitates in such form from the solution and penilloaldehyde as by-product which remains dissolved in the solution, separating and precipitated crystalline penicillamine-mercuric-mercaptide from the solution containing the by-product, and decomposing said penicillamine-mercuric-mercaptide to form penicillamine.

3,968,155

PROCESS FOR PREPARED PERCHLOROMETHYL MERCAPTAN BY CHLORINATION OF CARBON DISULFIDE

Jean Guérin, Grenoble, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 28, 1975, Ser. No. 571,919

Claims priority, application France, June 21, 1974, 74.21586

Int. Cl.² C07C *145/00, 149/16*

U.S. Cl. 260—543 H 5 Claims

1. An improved process for preparing perchloromethyl mercaptan which comprises (i) chlorinating carbon disulfide in the presence of iodine to produce a first chlorinated liquor, (ii) separating said liquor by distillation into a high-boiling fraction of technical grade perchloromethyl mercaptan and a low-boiling fraction, A (iii) chlorinating fraction A in the presence of iodine and absence of any substantial amount of metallic halides to produce a second chlorinated liquor, (iv) separating said second liquor by distillation into a high-boiling fraction of crude perchloromethyl mercaptan and a second low-boiling fraction, B, comprising sulfur dichloride and (v) heating fraction B at about 90°–150°C in presence of a metallic halide to form sulfur monochloride and regenerate chlorine.

3,968,156

PROCESS FOR PREPARING ALKYL-OR ARYLPHOSPHONOTHIOIC DIHALIDES

Eugene H. Uhing, Pleasantville, N.Y., and Arthur D. F. Toy, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 20, 1974, Ser. No. 534,942

Int. Cl.² C07F *9/42*

U.S. Cl. 260—543 P 7 Claims

1. A method of preparing compounds of the formula:

(I)

wherein R is a hydrocarbyl group consisting essentially of hydrogen and carbon including C_1 to C_{20} alkyl; the aryl substituted derivatives thereof, said aryl having 1 or 2 fused rings, cycloalkyl of 5–6 carbons in the ring, aryl of up to 3 fused rings, biphenyl and the C_1–C_4 alkyl substituted derivatives of said cycloalkyl, aryl or biphenyl and X is chlorine or bromine, comprising contacting under at least an autogenous pressure at a temperature of from about 175°C. to about 400°C. in the presence of phosphorus sulfides an alkyl or aryl halide of the formula:

$$RX \quad \text{(II)}$$

wherein R and X are as defined above with a trivalent phosphorus trihalide of the formula:

$$PX_3 \quad \text{(III)}$$

or a pentavalent thiophosphoryl halide of the formula:

$$P(S)X_3 \quad \text{(IV)}$$

or mixtures thereof wherein X is as defined above.

3,968,157

BISPHOSPHORAMIDES

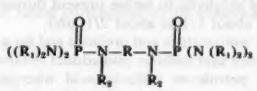
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 499,675, Sept. 5, 1974, which is a division of Ser. No. 284,012, Aug. 25, 1972, Pat. No. 3,868,376, which is a continuation-in-part of Ser. No. 278,850, Aug. 7, 1972, Pat. No. 3,795,613. This application Apr. 24, 1975, Ser. No. 571,022

Int. Cl.² C07F *9/22*

U.S. Cl. 260—551 P 3 Claims

1. A compound having the formula:



wherein

R is alkylene of 2 to 18 carbons;

R_1 is a vegetable oil fatty hydrocarbyl radical; and

R_2 is alkyl of 2 to 8 carbons.

3,968,158

PROCESS FOR PREPARING PERFLUOROGUANIDINE AND DIFLUOROUREA

Charles O. Parker, Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 12, 1963, Ser. No. 273,263

Int. Cl.² C07C *127/00, 129/08*

U.S. Cl. 260—553 R 5 Claims

1. A process for the preparation of difluorourea and perfluoroguanidine which comprises reacting in aqueous solution fluorine with a material selected from the group consisting of guanidine and water-soluble salts of guanidine.

3,968,159

PROCESS FOR PREPARING AZOMETHINES

Abul F. M. Iqbal, Glattbrugg, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 282,620, Aug. 21, 1972, abandoned. This application May 23, 1974, Ser. No. 472,763

Claims priority, application Switzerland, Aug. 31, 1971, 12751/71

Int. Cl.² C07C *119/10*

U.S. Cl. 260—566 F **5 Claims**

1. A process for the preparation of aromatic or heterocyclic azomethines which consists essentially of reacting under carbon monoxide pressure of 50 to about 500 atmospheres and a temperature of 50°–250°C, an aromatic or heterocyclic aldehyde, and an aromatic or heterocyclic nitro compound in the presence of a solvent containing a compound selected from the group consisting of basic tertiary amines and basic tertiary amides, and of a catalyst selected from the group consisting of $[Rh(CO)_2Cl]_2$, $[Rh(OCOCH_3)_2]_2$, $Rh_4(CO)_{12}$, $Rh_6(CO)_{16}$, $RhCl[(C_6H_5)_3P]_3$, RhO_2, Rh_2O_3, $Rh(OH)_3$ and $RhCl_3$ the molar ratio of said catalyst relative to the said nitro compound being from 1:100 to 1:50,000.

3,968,160

PREPARATION OF 1,2,3-TRIS[1,2-BIS(DIFLUORAMINO)ETHOXY]PROPANE

Samuel F. Reed, Jr., Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 27, 1964, Ser. No. 363,680

Int. Cl.² C07C *85/00*

U.S. Cl. 260—584 C **5 Claims**

1. A method for the preparation of 1,2,3-tris[1,2-bis(difluoramino)ethoxy]-propane which comprises reacting tetrafluorohydrazine and trivinoxypropane at a temperature of about 0° to about 120° C.

3,968,161

PROCESS FOR THE PREPARATION OF DAMASCENONE DERIVATIVES

Karl-Heinrich Schulte-Elte, Onex, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

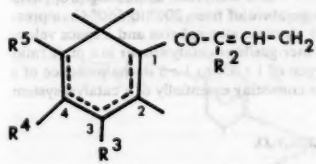
Continuation of Ser. No. 346,296, March 30, 1973, Pat. No. 3,923,896. This application July 22, 1975, Ser. No. 598,132

Claims priority, application Switzerland, Mar. 30, 1972, 4770/72

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 R **3 Claims**

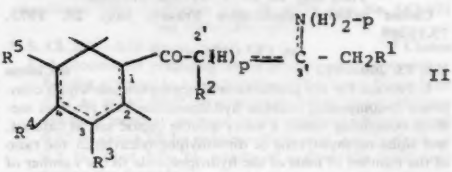
1. Process for the preparation of compounds of formula



III

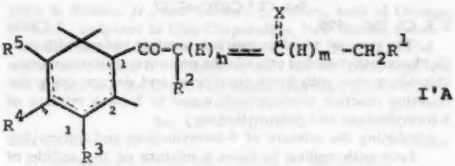
possessing one cyclic double bond at position 1, 2, 3, or 4, or two conjugated double bonds at position 1 and 3 as indicated by the dotted lines and wherein the symbols R^1 and R^2 represent a hydrogen atom or one of them represents a lower alkyl group containing from 1 to 6 carbon atoms, and the symbols R^3, R^4 and R^5 all represent a hydrogen atom or one of them represents a lower alkyl group containing from 1 to 6 carbon atoms and the other ones represent a hydrogen atom, which comprises

i. hydrolizing a compound of formula



II

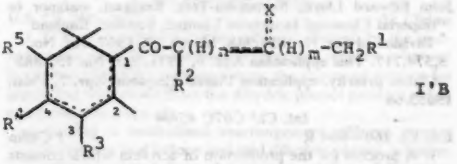
wherein the index p stands for the integers zero or 1, the dotted lines and the symbols R^1 to R^5 possess the meaning aforeindicated and wherein the side chain has a double bond at position 2′ (p = zero) or 3′ (p = 1) in solution in an aqueous organic solvent at a temperature from about 15°C to about the boiling temperature of the chosen solvent and in the presence of an acidic agent to afford a compound of formula



I'A

wherein both indexes m and n stand for the integers zero or 1, the dotted lines and symbols R^1 and R^5 possess the meaning aforeindicated, the side chain can contain a double bond at position 2′ or 3′ and wherein the symbol X represents an oxygen atom (m = zero; n = 1) or a hydroxyl radical (m and n = zero);

ii. reducing the keto-derivative thus obtained by means of a catalytic hydrogenation to afford a compound of formula



I'B

wherein indexes m and n both stand ... ., the dotted lines and the symbols R^1 to R^5 possess the meaning aforeindicated and wherein the symbol X represents a hydroxyl radical; and finally

iii. dehydrating the thus obtained hydroxy-derivative by means of an acidic or basic agent.

3,968,162
PREPARATION OF ACETOPHENONE

Guy Lartigau, Tassin-la-demi-Lune, and Pierre-Etienne Bost, Paris, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 24, 1974, Ser. No. 473,268
Claims priority, application France, May 28, 1973, 73.19289
Int. Cl.² C07C 49/78
U.S. Cl. 260—592 6 Claims

1. Process for the production of acetophenone which comprises decomposing cumene hydroperoxide in a reaction medium containing water, a water-soluble cupric salt as catalyst, and alpha-methylstyrene or dimethylphenylcarbinol, the ratio of the number of mols of the hydroperoxide to the number of gram atoms of copper in the aqueous phase being between 5 and 10^4, the weight of alpha-methylstyrene or dimethylphenylcarbinol being 0.1 to 4 times in mols the weight of the hydroperoxide.

3,968,163
PREPARATION OF 4 AND 5-METHYLINDANES

William Ebenezer Solomons, and Ian William Mathison, both of Memphis, Tenn., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Aug. 19, 1974, Ser. No. 498,558
Int. Cl.² C07C 47/52
U.S. Cl. 260—599 1 Claim

1. The process which comprises reacting indane with α,α-dichloromethyl methyl ether in the presence of titanium tetrachloride under anhydrous conditions and decomposing the resulting reaction mixture with water to form a mixture of 4-formylindane and 5-formylindane,

combining the mixture of 4-formylindane and 5-formylindane with aniline to form a mixture of the anilide of 4-formylindane and the anilide of 5-formylindane,

adding the mixture of the anilide of 4-formylindane and the anilide of 5-formylindane to acetonitrile in which the anilide of 5-formylindane preferentially crystallizes while the anilide of 4-formylindane remains dissolved in the acetonitrile,

hydrolyzing the separated anilide of 5-formylindane to give separated free 5-formylindane, and

hydrolyzing the separated anilide of 4-formylindane to give separated free 4-formylindane.

3,968,164
PROCESS FOR THE PRODUCTION OF ACROLEIN

John Edward Lloyd, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 625,948, March 27, 1967, Pat. No. 3,574,717. This application Apr. 9, 1971, Ser. No. 132,885
Claims priority, application United Kingdom, Apr. 7, 1966, 15653/66
Int. Cl.² C07C 45/04
U.S. Cl. 260—604 R 1 Claim

1. A process for the production of acrolein which consists essentialy of reacting water with allene at a temperature of 20°C to 180°C and a pressure from atmospheric to 10 atmospheres in the liquid phase and in the presence of a catalytic amount of a palladium salt selected from the group consisting of palladium acetate, palladium nitrate and complexes thereof with benzonitrile and a copper or iron redox system selected from the group consisting of copper carboxylate, iron carboxylate, copper nitrate and iron nitrate whereby allyl alcohol is formed as an intermediate and oxidized in situ to acrolein, the liquid phase being excess water or inert organic solvent.

3,968,165
PROCESS FOR PRODUCING ACROLEIN AND ACRYLIC ACID

Isao Ono; Tetsuo Iiguni, and Mitsumasa Akashi, all of Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

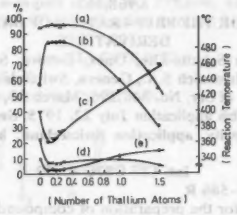
Division of Ser. No. 215,906, Jan. 6, 1972, Pat. No. 3,786,000. This application Jan. 10, 1974, Ser. No. 432,388
Int. Cl.² C07C 45/04
U.S. Cl. 260—604 R 10 Claims

1. A process for producing acrolein which comprises catalytic oxidizing propylene with a gas containing oxygen and steam in the vapor phase, at a temperature of 250 to 450°C, employing a calcined catalyst having the general composition of $Mo_a\ Co_b\ Fe_c\ Bi_d\ A_e\ O_f$, wherein a, b, c, d, e, and f in the above formula are respectively the atomic amounts of each element, and when a is equal to 12, the values of b, c, d, e, and f have the respective ranges, b=7–12, c=0.3–4, d=0.4–2.5, e=0.1–3, f=47–73, and A is composed of tin alone or a composite system of tin and one or more elements selected from a group consisting of aluminum, nickel, tungsten, chromium, indium and niobium, the minimum content of tin in A being in the atomic amount of 0.1.

3,968,166
CATALYTIC PROCESS FOR THE PREPARATION OF ACROLEIN

Tatsuo Shiraishi; Susumu Kishiwada; Shinkichi Shimizu; Shigeru Honmaru, all of Niihama; Akihiko Atsumi, Funabashi; Hiroshi Ichihashi, and Yoshihiko Nagaoka, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Continuation-in-part of Ser. No. 262,489, June 14, 1972, abandoned. This application May 30, 1975, Ser. No. 582,077
Claims priority, application Japan, June 14, 1971, 46-42310
Int. Cl.² C07C 45/04
U.S. Cl. 260—604 R 16 Claims



1. A process for preparing acrolein by the vapor phase oxidation of propylene which comprises contacting propylene and oxygen at a temperature of from 200° to 550° C., a pressure of from 0.7 to 5 absolute atmospheres and a space velocity of 100 to 24,000 liter-gas/liter-catalyst/hour in a mole ratio of propylene to oxygen of 1 : 0.4 to 1 : 3 in the presence of a catalyst composition consisting essentially of a catalyst system of the formula:

$$Mo_aBi_bFe_cNi_dTl_eP_fX_gY_hO_i$$

wherein X is at least one member selected from the group consisting of Mg, Mn and Co, Y is at least one member selected from the group consisting of Cu, Ca, Sr, Zn, Cd, Sn and Pb and a, b, c, d, e, f, g, h and i represent respectively the number of atoms and a is 12, b is from 0.1 to 5, c is from 0.1 to 12, d is from 0.1 to 12, e is 1 or less but not 0, f is from 0 to 5, g is from 0 to 12, h is from 0.1 to 12 and i is a number determined by the valence requirements of the other atoms present, provided that the sum of b plus c is from 0.2 to 12.5 and the sum of d plus g plus h is from 0.2 to 27.

3,968,167

METHYLOL DERIVATIVES OF POLYTHIOLS

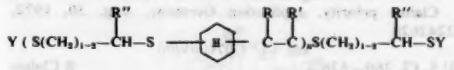
Richard A. Hickner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 548,115, Feb. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 388,714, Aug. 16, 1973, abandoned. This application Sept. 15, 1975, Ser. No. 613,716

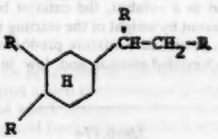
Int. Cl.² C07C *149/26*

U.S. Cl. 260—609 F 2 Claims

1. The methylol derivative of a polythiol, said derivative having the formula:



wherein *n* is 1–3, one of R and R′ is hydrogen and the other is hydrogen or methyl, and R″ is hydrogen or methyl; or said derivative having the formula



wherein each R is —Cl, —Br, —SR_1SY or —OR_2SR_1SY provided that at least two of said R groups independently are of said —SR_1SY or —OR_2SR_1SY; R_1 is an alkylene group having 2 to 10 carbon atoms or an alkylene group having 2 to 10 carbon atoms having one or more —O— or —S— ether groups and R_2 is an alkylene group of 2 to 4 carbon atoms; and wherein at least one Y is —CH_2OH with any remaining Y substituents being hydrogen.

3,968,168

P-TERT-BUTYL-DIPHENYLALKANE INSECTICIDES

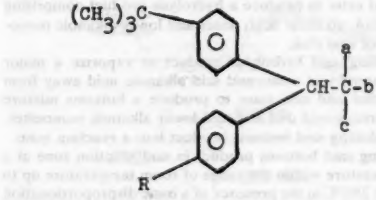
Jerry G. Strong, Warren, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 23, 1974, Ser. No. 499,875

Int. Cl.² C07C *43/20*; A01N *9/24*

U.S. Cl. 260—612 R 13 Claims

1. A compound having the following general structure:



wherein R is selected from the group consisting of OCH_3, OC_2H_5, OC_3H_7 and OC_4H_9 and a, b and c are the same or different and are each selected from the group consisting of chloro, alkyl (C_1–C_3) and hydrogen.

3,968,169

PROCESS FOR PREPARING POLYBLYCEROL

Paul Seiden, Cincinnati, and James Bruce Martin, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 420,728, Nov. 30, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,471

Int. Cl.² C07C *41/10*

U.S. Cl. 260—615 R 7 Claims

1. A process for preparing linear polyglycerol comprising:

a. heating glycerol to a temperature in the range from about 110° to about 180°C at a pressure below about 400 mm absolute mercury pressure in the presence of from about 0.03 to about 3% by weight sulfuric acid; and from about 0.1 to about 10% by weight of a glyceride compound having the formula

$$(R_1COO)_n C_3H_5(OH)_{3-n}$$

wherein R_1 represents CH_3—, or CH_3CH_2—; and *n* represents an integer from 1 to 3 inclusive; until from about 25 to about 75 percent of the glycerol is polymerized;

b. inactivating said sulfuric acid by the addition of a substantially stoichiometric amount of a neutralizing agent; and

c. removing the unreacted glycerol by distillation.

3,968,170

HALOGENATED ACETALS

John S. Babiec, Jr., and Richard J. Turley, both of Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 489,953, July 15, 1974, abandoned, which is a division of Ser. No. 400,385, Sept. 24, 1973, Pat. No. 3,843,569. This application Sept. 22, 1975, Ser. No. 615,701

Int. Cl.² C07C *43/30*

U.S. Cl. 260—615 A 5 Claims

1. Halogenated acetals represented by the formula

$$X_aRCH(OCH_2CHClCH_2CCl_3)_2$$

wherein

R is hydrogen or alkyl of 1–3 carbon atoms,

a is an integer from 1 to 3, and

X is chlorine, bromine or a mixture thereof.

3,968,171

PROCESS FOR THE CONTINUOUS ISOLATION OF DIHYDRIC PHENOLS

Ward J. Burkholder, Houston; Glenn E. Miller, Pasadena, and Fritz J. Nagel, Houston, all of Tex., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 5, 1970, Ser. No. 16,658

Int. Cl.² C07C *39/08*

U.S. Cl. 260—621 A 32 Claims

1. In a process for producing dihydric phenols by the rearrangement of dialkylbenzenehydroperoxide wherein a ketone is a byproduct of the rearrangement, the improved process for separating the ketone from the dihydric phenol product which comprises the steps of:

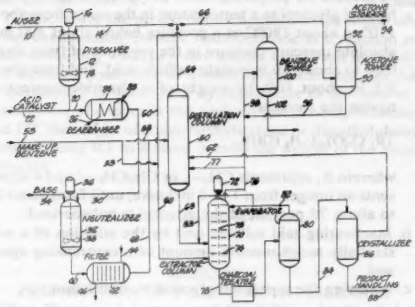
a. feeding a neutralized rearrangement effluent stream containing said ketone and said dihydric phenol, a hydrocarbon selected from the class consisting of benzene, toluene, xylene, ethylbenzene, diisopropylbenzene and mixtures thereof, and an aqueous feed to a distillation column, the aqueous feed comprising from about 10 to about 60 percent of the total feed to said distillation column and being primarily water;

b. supplying distillation heat to fluid in the lower section of the column;

c. removing a stream consisting essentially of the ketone from the upper section of the column;

d. removing bottoms comprising an aqueous phase and hydrocarbon phase from said column;

e. separating the hydrocarbon phase from the aqueous phase in an extractor column, water and a hydrocarbon selected from the class consisting of benzene, toluene,



xylene, ethylbenzene, diisopropylbenzene and mixtures thereof, being fed to said column to effect countercurrent extraction of said bottoms; and

f. recovering solid dihydric phenol product from the aqueous phase by crystallization.

3,968,172

PROCESS FOR THE PREPARATION OF 2,4,6-TRIMETHYLPHENOL

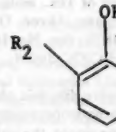
Yataro Ichikawa; Yoshiyuki Yamanaka; Tatuyuki Naruchi; Osamu Kobayashi, and Koichiro Sakota, all of Iwakuni, Japan, assignors to Teijin Limited, Osuha, Japan

Filed Oct. 2, 1973, Ser. No. 402,838

Int. Cl.[2] C07C *37/16*

U.S. Cl. 260—621 R **20 Claims**

1. A process for the preparation of 2,4,6-trimethylphenol by reacting a phenolic compound of the formula:



(1)

in which R_1 and R_2 each stands for hydrogen atom or methyl group, with methanol at vapor phase to methylate the former, which comprises performing the reaction at a temperature in range of from 430° –475°C., the gaseous mixture being composed essentially of the phenolic compound and methanol being contacted at a flow rate not higher than 0.4/hour, calculated as the sum weight in grams of the phenol and methanol per catalyst's weight in grams/hour, with a catalyst of which at least 90% by weight consists of magnesium oxide, said catalyst containing (1) no acidic substance of acid strength of pKa 4.8 or below and no basic substance of base strength of pKa 18.4 or above, and having (2) the ratio of basicity (k) of 60 to 100% wherein:

$$K = \frac{\text{Amount of base}}{\text{amount of base + amount of acid}} \times 100\ (\%),$$

and (3) a specific surface area of at least 15 m^2/g.

3,968,173

PROCESS FOR THE PREPARATION OF 5-ISOPROPYL-3-METHYL-PHENOL

Alfons Klein, Duesseldorf, and Karlfried Wedemeyer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 22, 1973, Ser. No. 390,449

Claims priority, application Germany, Aug. 30, 1972, 2242628

Int. Cl.[2] C07C *39/06*

U.S. Cl. 260—626 T **8 Claims**

1. In a process for the preparation of 5-isopropyl-3-methyl phenol comprising heating a material low in 5-isopropyl-3-methyl phenol and containing at least one of diisopropyl-3-methyl phenol and o- or p-isopropyl-3-methyl phenol at a temperature between 200°C and 400°C the improvement which comprises effecting the heating in an autoclave in the presence of synthetic aluminum silicate that has not been treated with acid as a catalyst, the catalyst being present in about 2 to 20 percent by weight of the starting methyl phenols, whereby there is produced a mixture predominantly comprising 5-isopropyl-3-methyl-phenol and low in diisopropyl-3-methyl phenols.

3,968,174

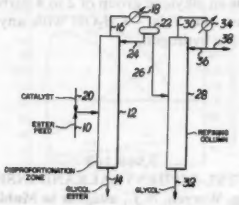
METHOD OF PRODUCING POLYHYDRIC COMPOUNDS

John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc., New York, N.Y.

Division of Ser. No. 178,588, Sept. 8, 1971, Pat. No. 3,859,368. This application Nov. 29, 1974, Ser. No. 528,104

Int. Cl.[2] C07C *29/00*

U.S. Cl. 260—635 R **6 Claims**



1. A process which comprises the steps of:

a. subjecting at least one lower alkanoic diester of an alkane diol containing 2 to 6 carbon atoms to partial hydrolysis with water in a hydrolysis zone to hydrolyze at least part of said ester to produce a hydrolysis product comprising said diol, alkanoic acid, water and lower alkanoic monoester of said diol,

b. distilling said hydrolysis product to vaporize a major portion of said water and said alkanoic acid away from said diol and said ester to produce a bottoms mixture comprising said diol and said lower alkanoic monoester,

c. introducing said bottoms product into a reaction zone,

d. heating said bottoms product in said reaction zone at a temperature within the range of room temperature up to about 280°C in the presence of a basic disproportionation catalyst which is a weak base or a substance which forms a weak base in situ in the presence of said lower alkanoic ester employed in the amount of 0.001 to 5% by weight based upon the free hydroxyl-group-containing lower alkanoic ester in the feed to convert at least some of said

lower alkanoic monoester to said diol and to a lower alkanoic diester of said diol, and

e. recovering said thus-produced diol from said reaction zone.

3,968,175

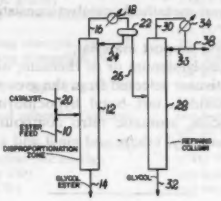
METHOD OF PRODUCING POLYHYDRIC COMPOUNDS

John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc., New York, N.Y.

Division of Ser. No. 178,588, Sept. 8, 1971, Pat. No. 3,859,368. This application Nov. 29, 1974, Ser. No. 528,102

Int. Cl.² C07C *29/00*

U.S. Cl. 260—635 R **4 Claims**



1. A process for producing an alkene diol containing 2 to 6 carbon atoms from a feed comprising a lower alkanoic monoester of said diol which comprises the steps of:

a. introducing said feed into a distillation zone,

b. heating said feed in said distillation zone at a temperature within the range of room temperature up to about 280°C. in the presence of a basic disproportionation catalyst which is a weak base or a substance which forms a weak base in situ in the presence of said lower alkanoic ester employed in the amount of 0.001 to 5% by weight based upon the free hydroxyl-group-containing lower alkanoic ester in the feed to convert at least some of said lower alkanoic diester of said diol and to a lower alkanoic diester of said diol, and

c. recovering said thus-produced diol from said distillation zone, said feed to said reaction zone being produced by partially hydrolyzing with water at least one lower alkanoic diester of said diol.

3,968,176

PROCESS FOR PRODUCING PENTAERYTHRITOL

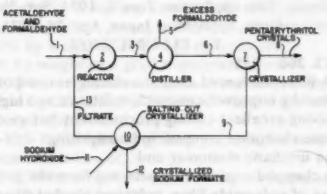
Hiromi Uehama; Kei Hioki, both of Takaishi; Akira Onuki, Mohara; Kazuo Hirokawa, and Takeshi Shoji, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed July 3, 1975, Ser. No. 593,125

Claims priority, application Japan, July 5, 1974, 49-76406

Int. Cl.² C07C *27/26*, *29/24*

U.S. Cl. 260—637 P **3 Claims**



1. In a process for producing pentaerythritol wherein sodium hydroxide is added to an aqueous solution containing pentaerythritol and sodium formate to allow the sodium formate to crystallize for separation and the separated solution is recirculated for use as part of the starting reaction solution, the improvement which comprises thermally treating at least a part of the reaction solution containing pentaerythritol formals in the pH range of 4.5–5.5 at a temperature of 120°–170°C., for 20–120 minutes, crystallizing and separating the resultant pentaerythritol, adding sodium hydroxide to the separated solution which contains pentaerythritol and sodium formate to crystallize the sodium formate therefrom and separating the crystallized sodium formate.

3,968,177

METHOD FOR PREPARING STRAIGHT-CHAIN PRIMARY ALCOHOLS

Manfred Kaufhold, and Harald Kett, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Sept. 11, 1974, Ser. No. 505,044

Claims priority, application Germany, Sept. 19, 1973, 2347095

Int. Cl.² C07C *29/00*

U.S. Cl. 260—638 R **8 Claims**

1. In a process for preparing straight-chain, primary alcohols having 6 – 20 carbon atoms, the improvement comprising: reacting at a temperature of about 150° to 300°C straight-chain 1-chloroalkanes having 6 to 20 carbon atoms with alkali salts of alkanoic acids having 4 to 22 carbon atoms in the presence of 1 to 10 mole percent of alkanoic acids based on said alkali salts of the alkanoic acids to form esters, saponifying said esters in an alkaline medium to form straight-chain, primary alcohols having 6 – 20 carbon atoms and separating said straight-chain, primary alcohols.

3,968,178

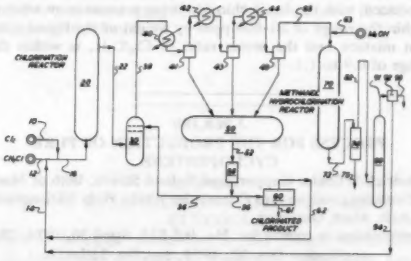
CHLORINATION OF HYDROCARBONS

Robert P. Obrecht, New Canaan, and Marlin J. Bennett, Ridgefield, both of Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 726,804, May 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 681,546, Nov. 8, 1967, abandoned. This application Oct. 19, 1971, Ser. No. 190,640

Int. Cl.² C07C *17/10*

U.S. Cl. 260—658 R **8 Claims**



1. In a process of carrying out the vapor phase, thermal substitution chlorination of methyl chloride thereby producing a vaporous effluent comprising chlorine substituted materials in admixture with hydrogen chloride, the improvement comprising conducting the reaction in a first zone under substantially anhydrous conditions at a temperature between about 350° and 500°C. and under an elevated pressure between about 50 and about 200 psig., withdrawing said effluent and passing same to a partial condensation zone, maintained under an elevated pressure between about 50 and about 200 psig and low terminal temperature, to condense chlorine substituted materials and to provide a gas stream containing

substantially anhydrous hydrogen chloride and a small percentage of chlorine substituted hydrocarbons.

5. In a process of carrying out the vapor phase, thermal substitution chlorination of methyl chloride thereby producing a vaporous effluent comprising chlorine substituted materials in admixture with hydrogen chloride, the improvement comprising conducting the reaction in a first zone under substantially anhydrous conditions at a temperature between about 350°C. and 500°C. and a pressure between about 50 psig and about 200 psig, passing said effluent to a quenching zone and then to a partial condensation zone maintained at a pressure between about 50 psig and about 200 psig and a relatively low terminal temperature to separate chlorine substituted materials from a substantially anhydrous gas stream containing hydrogen chloride, passing said gas stream containing hydrogen chloride, at a pressure between about 50 psig and about 200 psig, to a separation zone to separate additional chlorine substituted materials from said gas stream to produce substantially anhydrous, purified hydrogen chloride.

3,968,179

SELECTIVE PREPARATION OF 1,2-DICHLOROETHANE

Jean-Claude Strini, St.-Auban, and Jean-Raymond Costes, Dampierre, both of France, assignors to Rhone-Progil, Paris, France

Filed Dec. 21, 1973, Ser. No. 427,373

Claims priority, application France, Dec. 27, 1972, 72.46390

Int. Cl.² C07C *17/02*

U.S. Cl. 260—660 5 Claims

1. A process for the continuous liquid phase chlorination of ethylene with molecular chlorine at a temperature within the range of 20° to 80°C. in the absence of light and in the presence of liquid 1,2-dichloroethane containing ferric chloride dissolved therein to produce 1,2-dichloroethane along with less than 0.1 mole % of 1,1,2-trichloroethane based upon the ethylene converted comprising the steps of feeding to a reaction zone chlorine in an amount sufficient to provide dissolved chlorine within the range of 1 to 20 g per kg of liquid reaction mixture, maintaining the flow of ethylene to the reaction zone in an amount sufficient to provide a ratio R betwen the molar hourly flow rate of ethylene to the reaction zone and the molar hourly flow rate of ethylene which saturates the 1,2-dichloroethane contained in the reaction zone to within the range of close to 0 to 140, and recovering the 1,2-dichloroethane produced, with the ferric chloride being present in an amount within the range of 20–800 ppm by weight of the liquid reaction mixture and the molar ratio of Cl_2/C_2H_4 is within the range of 0.9 to 1.1.

3,968,180

PROCESS FOR THE PRODUCTION OF PURE CYCLOPENTENE

Friedrich-Wilhelm Kupper, and Roland Streck, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellchaft, Marl, Germany

Continuation-in-part of Ser. No. 465,515, April 30, 1974. This application Oct. 22, 1974, Ser. No. 517,022

Claims priority, application Germany, Dec. 21, 1973, 2363705

Int. Cl.² C07C *3/26*

U.S. Cl. 260—666 A 8 Claims

1. In a process for the production of cyclopentene free of C_5-diene impurities, which comprises metathetically reacting cis,cis-cyclodecadiene-(1,6) with a catalytic amount of a metathesis catalyst capable of promoting the ring-opening polymerization of cyclic olefin having at least one unsubstituted ring double bond at a metathesis reaction temperature of from 0°C. up to the temperature at which said catalyst decomposes for a period of time sufficient to form said cyclopentene having a C_5-diene content of less than 0.1 weight percent of the total reaction mixture, the improvement which comprises employing a heterogeneous metathesis catalyst consisting essentially of

a. a solid catalyst support material, and

b. an oxide of molybdenum or of rhenium.

5. In a process for the production of cyclopentene free of C_5-diene impurities, which comprises metathetically reacting cis,cis-cyclodecadiene-(1,6) with a catalytic amount of a metathesis catalyst capable of promoting the ring-opening polymerization of cyclic olefin having at least one unsubstituted ring double bond at a metathesis reaction temperature of from 0°C. up to the temperaure at which said catalyst decomposes for a period of time sufficient to form a reaction product consisting essentially of said cyclopentene having a C_5-diene content of less than 0.1 weight percent of the total reaction mixture, the improvement which comprises employing a heterogeneous metathesis catalyst consisting essentially of

a. a solid catalyst support material;

b. an oxide of molybdenum or of rhenium; and

c. a catalyst activator selected from the group consisting of alcohols, epoxides, tert.-butyl hypochlorite, peroxides, carboxylic acids, aromatic nitro compounds, vinyl halides, vinyl and allyl ethers and vinyl and allyl esters.

3,968,181

MODIFIED ACRYLATE RESIN

Christopher W. Uzelmeier, Laurel Springs, and Paul D. Jones, Cherry Hill, both of N.J., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 17, 1975, Ser. No. 559,183

Int. Cl.² C08G *45/06*

U.S. Cl. 260—837 R 3 Claims

1. An ultraviolet curable acrylate resin composition with improved adhesion to metal surfaces comprising a mixture of (i) a half ester of an aliphatic monohydric alcohol and a polycarboxylic acid anhydride, (ii) acrylic acid and (iii) a polyepoxide in a ratio of between about 0.3 and about 0.9 chemical equivalents of the half ester per chemical equivalent of the polyepoxide and between about 0.7 and about 0.1 chemical equivalents of the acrylic acid per chemical equivalent of the polyepoxide wherein said polyepoxide is a glycidyl ether of 2,2-bis (4-hydroxyphenyl)propane.

3,968,182

URETHANE RUBBER COMPOSITIONS REINFORCED WITH CHOPPED ORGANIC FIBERS

Sakae Inoue, Kodaira; Toshio Nishi, Musashi-Murayama; Shoson Shibata, Tokyo; Tsutomu Matsunaga, and Yoshio Kaneko, both of Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 243,065, April 11, 1972, abandoned. This application June 5, 1974, Ser. No. 476,399

Claims priority, application Japan, Apr. 26, 1971, 46-26704

Int. Cl.² C08L *75/12*

U.S. Cl. 260—858 7 Claims

1. A fiber-reinforced urethane elastomer composition characterized by improved cut-crack resistance and high modulus, and having excellent casting processability before curing, said urethane elastomer composition comprising

a. an urethane elastomer and

b. a chopped organic fiber selected from the group consisting of polyamide fiber, polyvinyl alcohol fiber, polyester fiber, rayon and polyacrylonitrile fiber, having a diameter of from 1 micron to 50 microns and an aspect ratio of 80 to 500, said chopped organic fiber being present in not more than 8% by volume based on the total volume of said elastomer composition.

3,968,183

FILM EXCELLENT IN SLIP CHARACTERISTICS AND ITS PRODUCTION

Ikuya Hayashi, Inuyama; Yukio Yamane, Ootsu; Chiyozi Hitomi, Ootsu, and Keiske Miyake, Ootsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed June 27, 1974, Ser. No. 483,707

Claims priority, application Japan, June 30, 1973, 48-74284; June 30, 1973, 48-74286

Int. Cl.² C08L *67/00*

U.S. Cl. 260—860 **19 Claims**

1. A film of a polyester block copolymer, which has the following physical constants:

(1)	Specific gravity	1.003–1.300
(2)	Young's modulus (kg/cm²)	not more than 1,500 (at 20°C)
(3)	Breaking strength (kg/cm²)	150–800 (at 20°C)
(4)	Breaking elongation (%)	not less than 300 (at 20°C)
(5)	Impact strength (kg.cm/25μ)	not less than 8 (at 20°C
(6)	Thermal adhesion (kg/cm)	not less than 0.5 (at 20°C)
(7)	Oxygen permeability constant (cc.cm/cm².sec.cmHg)	0.5×10^{-10} –100 $\times 10^{-10}$ (at 30°C)
(8)	Clarity (%)	not less than 80
(9)	Haze (%)	not more than 2,

the polyester block copolymer comprising crystalline polyester segments and non-crystalline polymer segments in a weight ratio of 99 : 1 to 10 : 90 and having a number average molecular weight of about 10,000 to 100,000, the melting point of a high self-supporting polymer substantially constituted with the monomer components of the said crystalline polyester segments alone being not lower than about 200°C and the melting point or softening point of a polymer substantially constituted with the said non-crystalline polymer segments themselves being not higher than about 80°C, said film being prepared by melt extruding said polyester block copolymer to form a film and cooling the film in a melt state at a temperature of about 40° to 120°C to solidify it.

3,968,184

IMPACT-RESISTANT POLYVINYL CHLORIDE GRAFTED ETHYLENE-VINYL ESTERS

Dietrich Hardt; Heinrich Alberts, both of Cologne, and Herbert Bartl, Odenthal-Hahnenberg, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 2, 1974, Ser. No. 457,259

Claims priority, application Germany, Apr. 7, 1973, 2317652

Int. Cl.² C08J *9/16*; **C08L** *51/06, 33/18, 27/06*

U.S. Cl. 260—876 R **13 Claims**

1. Thermoplastic moulding compounds consisting essentially of a mixture of

A. 25–99% by weight of polyvinyl chloride and

B. 1–75% by weight of a graft copolymer of

I. 10–70% by weight of an ethylene/vinyl ester copolymer containing 25–75% by weight of vinyl ester units as grafting substrate and

II. 90–30% by weight of grafted polymerized units of a monomer mixture of

a. 15–85% by weight of acrylonitrile, methacrylonitrile or a mixture thereof,

b. 85–15% by weight of at least one aromatic vinyl compound and

c. 0.1–10% by weight of at least one aliphatic monoolefin having 2–18 carbon atoms,

the sum of the percentage contents of (a) to (c) being 100.

3,968,185

PREPARATION OF MODIFIED ELASTOMERS

Francis P. Baldwin, 19 Winchester Road, Summit, N.J. 07901, and Alberto Malatesta, 202 Avenue Churchill, 1180 Brussels, Belgium

Filed Dec. 9, 1974, Ser. No. 530,613

Int. Cl.² C08F *255/10*

U.S. Cl. 260—880 R **18 Claims**

1. A method of crosslinking conjugated diene butyl rubber containing randomly distributed sites of conjugated olefinic unsaturation, which comprises reacting said elastomers with a crosslinking agent comprising at least 1 non-gaseous, soluble, free radical polymerizable monomer in the presence of at least 1 free radical initiator.

3,968,186

ADHESIVE COMPOSITIONS

Heinz Tomaschek, Bad Homburg, and Viktor Winkovik, Oberursel, both of Germany, assignors to USM Corporation, Boston, Mass.

Filed July 19, 1974, Ser. No. 490,044

Int. Cl.² C08L *33/14*

U.S. Cl. 260—881 **6 Claims**

1. An adhesive composition consisting essentially of one or more polymerizable esters of 2-cyanoacrylic acid according to the general formula

where R is an alkyl or alkenyl group having 1 to 16 carbon atoms, a cyclohexyl group or a phenyl group, and stabilizing additives characterized in that the adhesive includes from about 1% to about 20% by weight of the adhesive composition of a copolymer of from about 50% to about 80% by weight of a lower alkyl-2-cyanoacrylate and from about 50% to about 20% by weight of either styrene or methyl styrene to render said copolymer soluble in said ester of -2-cyanoacrylic acid, said copolymer having a reduced viscosity of from about 0.5 to 2.5 (determined using 0.4 gm. of the copolymer in 100 ml. of dimethylformamide).

3,968,187

FLAME RETARDANT HALOALKYL ESTERS OF GLYCOLS

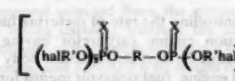
Albert W. Morgan, Collinsville, Ill., and William Vanderlinde, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,448

Int. Cl.² C07F *9/09, 9/165*

U.S. Cl. 260—928 **5 Claims**

1. A compound of the formula



wherein R represents cycloalkylene of 5 or 6 carbon atoms or alkylenecycloalkylene of 8, 10 or 12 carbon atoms, R′ represents an alkylene group of 2 to 4 carbon atoms, X represents oxygen or sulfur, and hal represents chlorine or bromine.

3,968,188
PROCESS FOR PREPARING THE PENTAERYTHRITOL ESTER OF PHOSPHOROHALIDOUS ACID

Gail H. Birum, and Michael L. Losee, both of Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 4, 1974, Ser. No. 439,504
Int. Cl.² C07F 9/15
U.S. Cl. 260—976 12 Claims

1. In a process for the preparation of the pentaerythritol ester of phosphorohalidous acid by the reaction of pentaerythritol and a trivalent phosphorus trihalide selected from the group consisting of phosphorus trichloride and phosphorus tribromide, the improvement comprising conducting the reaction at a pentaerythritol:phosphorus trihalide molar ratio of 1:2 in the presence of a catalyst selected from the group consisting of (1) lithium chloride, sodium chloride, potassum chloride, calcium chloride and magnesium chloride, (2) a tertiary amine of the formula

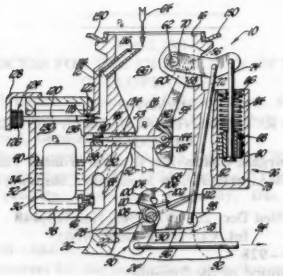
wherein R represents an alkyl group of from 1 to about 12 carbon atoms or an aryl group of from 6 to 12 carbon atoms or (3) a heterocyclic nitrogen-containing compound of the formula

wherein R′ represents hydrogen or an alkyl group of 1 to 5 carbon atoms and the hydrochloride or hydrobromide salts thereof.

3,968,189
METHOD AND APPARATUS FOR VARYING FUEL FLOW FROM A VARIABLE VENTURI CARBURETOR TO COMPENSATE FOR CHANGES IN BAROMETRIC PRESSURE AND ALTITUDE

Kenneth C. Bier, Bloomfield Hills, Mich., assignor to Colt Industries Operating Corporation, New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,325
Int. Cl.² F02M 7/24
U.S. Cl. 261—39 A 10 Claims

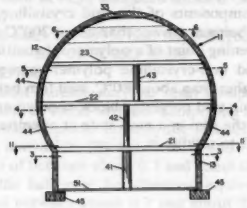


1. A method of controlling the rate of metering fuel flow in an internal combustion engine carburetor having a body, induction passage means formed through said body for communicating with said engine, fuel reservoir means for containing fuel, variable venturi means situated within said induction passage means, throttle valve means situated within said induction passage means downstream from said variable venturi means, fuel delivery means including fuel metering means communicating between the interior of said fuel reservoir means and said induction passage means adjacent said venturi, said fuel metering means being effective to meter the rate of fuel flow from said fuel reservoir means through said fuel delivery means and into said induction passage means in accordance with a metering pressure differential across said metering means, said method comprising the steps of sensing a pressure indicative of ambient pressure, sensing a pressure indicative of the velocity rate of air flow through said induction passage means, modifying the said pressure indicative of the velocity rate of air flow in accordance with the degree to which said variable venturi means is opened, and creating a control pressure within said fuel reservoir applied said fuel which is a function of both said pressure indicative of ambient pressure and said modified pressure indicative of rate of air flow in order to reduce the magnitude of said metering pressure differential to compensate for decreases in ambient pressure.

3,968,190
METHOD OF MOLDING A SPHERICAL STRUCTURE

James L. Stewart, 636 Church St., Logan, Ohio 43138

Filed June 26, 1974, Ser. No. 483,372
Int. Cl.² E04B 1/16
U.S. Cl. 264—32 2 Claims



1. The method of constructing spherically shaped building structures wherein a plurality of annular rings composed of structural material each positioned higher than the next lower annular ring and each having a spherically shaped surface are created by

a. the successive forming for each ring below the horizontal equator of the building of a pair of adjacent annular ring forms, one ring form of each pair of ring forms having an arcuate inner surface and the other ring of each pair having an arcuate outer surface forming a portion of a spherical surface and being positioned within the first described ring form of the pair, the said inner and outer surfaces of each said pair being substantially parallel to each other, and each pair of ring forms being substantially parallel to the horizontal equator so that the annular rings to be created will also be parallel to the horizontal equator;

b. pouring suitable structural material between the surfaces of each pair of ring forms and allowing such material to harden before positioning the next higher pair of forms;

c. repeating the process until the horizontal equator is reached;

d. disassembly of the forms for the annular rings below the horizontal equator; and

e. inverting the ring forms and utilizing the inverted ring forms in reverse order to complete in similar manner annular rings of the upper portion of spherically shaped building structure.

3,968,191

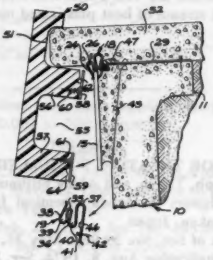
METHOD OF SETTING TILE AND FORMING SWIMMING POOL DECK

William J. Stegmeier, 1021 C Shary Circle, Concord, Calif. 94520

Continuation of Ser. No. 299,209, Oct. 20, 1972, abandoned. This application Sept. 6, 1974, Ser. No. 503,949

Int. Cl.² E04B 1/16; E04H 7/18

U.S. Cl. 264—34 15 Claims



1. In a method of forming a side wall for a swimming pool or the like, the steps of: forming an upwardly extending concrete wall, thereafter temporarily supporting a plurality of tile units in side-by-side juxtaposition along said wall in spaced relation therewith to define a cavity having an accessible open top, substantially filling said cavity through its open top intermediate said plurality of tile units and the facing surface of said previously formed wall with a mass of mortar while said tile units are temporarily supported along said wall to bring said mortar into intimate bonding contact with the facing surfaces of said tile units and wall, maintaining said mortar mass within said cavity to enable said mortar to bond said tile units to said wall, thereafter releasing said temporary support of said tile units along said wall whereby said tiles are supported thereafter by said concrete wall, pouring a mass of concrete in overlying relation with said wall along the upper edge thereof to overhang said tile units, and maintaining said concrete mass in such overlying relation to cure and thereby define a cantilever deck along said wall.

3,968,192

METHOD OF REPAIRING LEAKY HOLLOW FIBER PERMEABILITY SEPARATORY DEVICES

Sargent Glenn Hoffman, III, Fresno, and Frank Watkins Mather, III, Orinda, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 19, 1974, Ser. No. 462,457

Int. Cl.² B32B 35/00

U.S. Cl. 264—36 5 Claims

1. A process for remedying leaks in a tubesheet/hollow fiber assembly comprising a plurality of hollow fiber lengths having end portions potted in and extending through a solid body of fusible resin and opening upon an accessible surface of said body, said process comprising

1. disposing said assembly within an opening in a casing, said casing being adapted for connection to a fluid pressure source, in such manner that the accessible tubesheet surface is exposed,
2. effecting a seal between the periphery of said tubesheet and the portion of said casing adjacent said opening,
3. supplying a fluid under pressure to the volume within said casing exterior to said fiber lengths, thereby pressurizing said volume,
4. locating an opening in said accessible surface from which egress of said fluid occurs,
5. heating the assembly materials in the immediate vicinity of the opening in said accessible surface and applying pressure to the heated materials with rod means until said opening is sealed.

3,968,193

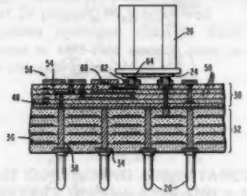
FIRING PROCESS FOR FORMING A MULTILAYER GLASS-METAL MODULE

Perry Robert Langston, Jr., and Melvin Norris Turetzky, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,529

Int. Cl.² C04B 37/04, 37/02

U.S. Cl. 264—61 5 Claims



1. A process for forming a solid glass electrical interconnection package having a plurality of interposed metallized planes by sequentially depositing a plurality of successive glass layers comprising the steps:

a. providing a dielectric substrate;
b. depositing a glass slurry over the upper surface of the substrate for forming a first glass layer;
c. heating said first glass layer in a first gaseous ambient soluble in the first glass layer at a temperature capable of forming a first solution comprising a first glass layer solvent and a first gaseous ambient solute, said first gaseous ambient solute being substantially completely dissolvable in said first glass layer solvent for rendering said first layer bubble-free at the heating temperature;
d. changing the first gaseous ambient to a second gaseous ambient insoluble in said first solution for providing a concentration gradient for rapidly driving said first gaseous ambient solute from said first glass layer solvent to a concentration incapable of super-saturation therein of any remaining portion of said first gaseous ambient solute during a subsequent cooling step, and
e. cooling said first glass layer solvent for hardening and maintaining said first glass layer bubble-free.

3,968,194

DENSE POLYCRYSTALLINE SILICON CARBIDE

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 431,611, Jan. 8, 1974. This application Oct. 6, 1975, Ser. No. 619,953

Int. Cl.² C04B 35/56, 35/52, 35/14

U.S. Cl. 264—65 5 Claims

1. A method of making a dense silicon carbide ceramic comprising the steps of

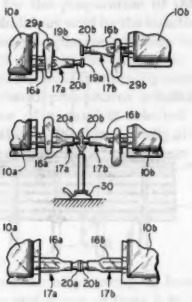
a. forming a substantially homogeneous dispersion of a submicron powder of silicon carbide, a boron containing compound selected from the group consisting of boron and boron carbide, wherein the amount of the boron containing compound is equivalent to 0.3–3.0% by weight of boron, and 3.5–10.0% by weight of silicon nitride, and
b. hot pressing the dispersion in an inert atmosphere at a temperature of about 1950°–2050°C and at a pressure of about 5,000–10,000 psi for a sufficient time to produce a high density ceramic.

3,968,195

METHOD FOR MAKING STERILE CONNECTIONS

Marilyn Bishop, One N. 341 Indian Knoll Road, West Chicago, Ill. 60185

Filed June 17, 1974, Ser. No. 479,755
Int. Cl.² B29C 27/00
U.S. Cl. 264—154 14 Claims



1. A method for making a sterile connection between first and second fluid passage means, each of said fluid passage means having a port structure including a thermoplastic tube having a free end sealed off by a thermoplastic diaphragm, comprising the following steps:

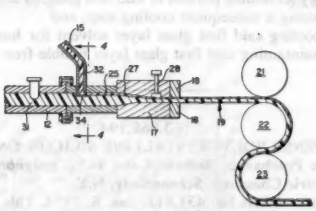
a. aligning each free end of each tube;
b. heat softening each free end;
c. melting open each thermoplastic diaphragm;
d. contacting together each free end of each tube while each free end is in a melted open condition; and
e. cooling and solidifying the contacting free ends of each tube causing said free ends to be permanently joined.

3,968,196

METHOD OF CO-EXTRUSION OF POLYVINYLIDENE FLUORIDE/POLYSTYRENE MULTIPLE-LAYERED SHEETING

Donald F. Wiley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Mar. 29, 1971, Ser. No. 128,939
Int. Cl.² B29D 7/02, 9/00; B29F 3/08
U.S. Cl. 264—171 7 Claims



1. A process for the manufacture of composite sheeting having a major layer corresponding substantially to the final composite sheeting thickness of a styrene polymer selected from the group consisting of homopolystyrene, impact polystyrene and normal copolymers of styrene containing a minor amount of another copolymerizable monomer, and a minor layer of vinylidene fluoride polymer firmly united to the exterior surface of said major layer, comprising: conveying a heat plasticized stream of said styrene polymer in a conduit having a generally circular cross section, joining to the exterior surface of said styrene polymer stream within the said conduit a second, heat plasticized stream of said vinylidene fluoride polymer, thereby forming a single stratified stream of heat plasticized material conforming to the cross section of said conduit and being characterized by distinct, contiguous layers of said polymeric materials having a relatively sharply defined interface therebetween, said interface terminating at each end at a point on the inside surface of said conduit, adjusting the melt viscosity of the vinylidene fluoride polymer, by adjusting its temperature, to a value within the range of about 50 to 150% of the melt viscosity exhibited by said styrene polymer under extrusion conditions, conveying said stratified stream undisturbed through said conduit to a sheet-form extrusion die having its die lips generally aligned in parallel with the said interface between the two polymeric materials, and passing said stratified stream of heat plasticized material through the said die.

3,968,197

PROCESS FOR TREATING SODIUM SILICO FLUORIDE

Hirokazu Satoh, Tokyo, and Akira Fujimura, Urawa, both of Japan, assignors to Onoda Chemical Industry Company, Limited, Tokyo, Japan

Continuation of Ser. No. 39,965, May 25, 1970, abandoned. This application Aug. 8, 1974, Ser. No. 495,833
Claims priority, application Japan, May 29, 1969, 44-41360
Int. Cl.² C01D 3/04; C01B 33/16; C01C 1/16
U.S. Cl. 423—339 4 Claims

1. In the process of reacting sodium silicofluoride having a particle size of less than 250 microns and ammonia in an aqueous medium to produce silica, sodium fluoride and ammonium fluoride, the improvement comprising:

a. adding ammonia, in the form of a member selected from the group consisting of free ammonia gas and aqueous ammonium hydroxide having a concentration, calculated as free ammonia, of at least about 7.5 weight percent, at a rate such that the concentration of ammonium hydroxide in the reaction medium is less than about 5 weight percent over a period of at least about 60 minutes, until substantially all the sodium silicofluoride is reacted:
b. agitating to a degree greater than that required to disperse sodium fluoride crystals and silica gel of said reaction medium produced in the course of said addition of ammonia and for a period of at least about 20 minutes after completion of said addition of ammonia:
c. after completion of the reaction, adding a stoichiometric excess of said ammonia in an amount such that the total ammonium ion concentration consisting of ammonium fluoride and ammonium hydroxide in the reaction medium is more than 7.5 weight percent, calculated as free ammonia; and
d. separating sodium fluoride crystals having a particle size of more than 100 microns and silica gel having a particle size of less than 5 microns thus prepared separately from ammonium fluoride solution.

3,968,198

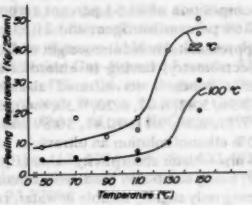
METHOD FOR IMPROVING THE ADHERING ABILITY OF VULCANIZED RUBBER SURFACES

Toshio Honda; Shoji Tanaka, both of Akigawa; Yukio Fukuura, Kodaira; Yoshikatsu Suzuki; Itsuo Tanuma, both of Higashi-Murayama; Koichi Iwami, Kunitachi, and Shoson Shibata, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,081
Claims priority, application Japan, Jan. 26, 1973, 48-10775; Feb. 16, 1973, 48-18418; May 12, 1973, 48-52885
Int. Cl.² B29C 25/00; C01B 21/12
U.S. Cl. 264—343 8 Claims

1. A method for improving an adhering ability of a surface of a vulcanized rubber, which comprises treating said vulca-

nized rubber surface with a 0.01 to 5% by weight solution of iodine isocyanate in an organic solvent in such an amount that



the amount of iodine isocyanate applied on the vulcanized rubber surface is 0.001 to 500 mg/cm².

3,968,199
PROCESS FOR MAKING SILANE

Carl James Bakay, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

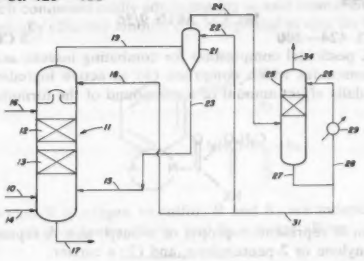
Filed Feb. 25, 1974, Ser. No. 445,667
Int. Cl.² C01B *33/04*
U.S. Cl. 423—347 **4 Claims**

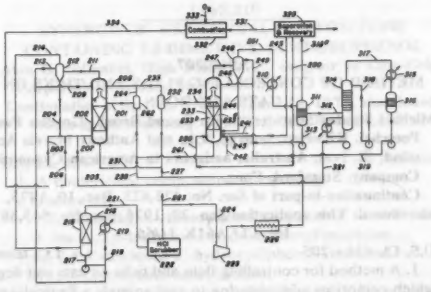
1. The process of producing SiH_4 which comprises providing $HSiCl_3$ in a bed of an insoluble, solid anion exchange resin congtaining tertiary amino or quaternary ammonium groups bonded to carbon thereof, maintaining the temperature of the bed where $HSiCl_3$ is provided sufficient to cause said $HSiCl_3$ to be disproportionated to form vaporous products which rise in the bed, and $SiCl_4$, which is condensed, maintaining the temperature at the top of the bed above the boiling point of SiH_4 and below the boiling point of H_3SiCl and recovering SiH_4 which is substantially free of chlorosilicon hydrides from the bed.

3,968,200
REACTOR EFFLUENT QUENCH SYSTEM

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Mar. 27, 1972, Ser. No. 238,196
Int. Cl.² C01B *7/08*; C01G *3/04*, *3/06*
U.S. Cl. 423—488 **12 Claims**





1. In an oxychlorination reaction, a process for recovering hydrogen chloride, comprising:

withdrawing a gas containing hydrogen chloride and water vapor from an oxychlorination reaction zone;

contacting said gas in a first quench zone with an aqueous hydrogen chloride quench liquid to cool said gas, said contacting partially vaporizing said quench liquid to produce a remaining aqueous hydrogen chloride liquid having a hydrogen chloride concentration greater than the hydrogen chloride concentration of said quench liquid;

introducing said remaining aqueous hydrogen chloride liquid into said oxychlorination reaction zone;

further cooling cooled gas from said first quench zone in a second quench zone to produce aqueous hydrogen chloride having a hydrogen chloride concentration from about 8 to about 20 percent, by weight; and

passing aqueous hydrogen chloride from said second quench zone to said first quench zone as said aqueous hydrogen chloride quench liquid.

3,968,201
DOSAGE UNIT CONTAINING A SUBSTANCE SHOWING A TOPICAL EFFECT ON THE EYE, AND A METHOD OF PREPARING SAME

Emma Marta Ryde, and Jan Erik Ekstedt, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Division of Ser. No. 416,717, Nov. 16, 1973, Pat. No. 3,868,445. This application Nov. 18, 1974, Ser. No. 525,031
Claims priority, application Sweden, Nov. 30, 1972, 15652/72
Int. Cl.² A61K *9/02*, *9/06*
U.S. Cl. 424—14 **19 Claims**

1. An opthalmic composition in the form of a solid shaped body having a largest dimension between the limits of 2 – 20 mm and remaining dimensions within the range of 0.5 – 10 mm, with softly rounded corners so as not to cause eye irritation, the body being either planar or suitably molded to obtain the shape of a lens capable of fitting into the space between the eye and the surrounding tissue with a surface facing toward the eye, said solid shaped body as a result of its plasticity forming itself to the shape of the eye cavity when inserted into the eye, said body comprising a mixture of:

a. 5 – 90% of at least one lipophilic substance having a melting point of 46° – 75°C and being selected from the group consisting of higher hydrocarbons, waxes, fats and mixtures thereof, having a melting point within the aforementioned range,

b. 0 – 40% of at least one water-soluble or water-swellable polymer in solid, finely-divided form,

c. 0.05 – 30% of at least one drug showing a topical effect on the eye,

d. 0.2 – 20% of at least one water-insoluble lipophilic polymer having a softening temperature exceeding 70°C and a melting point exceeding 85°C and which is soluble in the lipophilic substance or substances in molten form to serve as stabilizer for the mixture,

the percentages relating to percent by weight calculated on the total weight of the mixture.

3,968,202
TETANUS ANTIGEN AND PROCESS FOR ITS MANUFACTURE

Philipp Stein, Marbach near Marburg an der Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Filed Aug. 9, 1974, Ser. No. 496,187
Claims priority, application Germany, Aug. 13, 1973, 2340911
Int. Cl.² A61K *39/02*
U.S. Cl. 424—92 **6 Claims**

1. A method for making a tetanus antigen by the inactivation of a tetanus toxin, which comprises treating a solution of

tetanus toxin with 0.005 to 5.0 mols per liter of oxymethane sulfinate at a pH between 5 and 11 and at a temperature between 0° and 40°C. until the toxicity of the tetanus toxin has disappeared.

3,968,203

AEROSOL ASTRINGENT COMPOSITION

Joseph G. Spitzer, Mamaroneck, and Lloyd Osipow, New York, both of N.Y., assignors to Jerome G. Spitzer, Mamaroneck and Marvin Small, New York, both of, N.Y., part interest to each

Continuation of Ser. No. 492,268, Oct. 1, 1965, abandoned. This application Aug. 26, 1969, Ser. No. 853,626

Int. Cl.[2] A61K *7/38*

U.S. Cl. 424—47 **5 Claims**

1. A package for containing and dispensing an astringent and anti-perspirant agent including in combination

a. a pressure-tight metallic container having a valve-controlled opening and a valve for dispensing liquid in aerosol form, and

b. a composition in said container consisting essentially of

c. an aluminum chlorohydrate astringent in fine powder form of about 1 to 100 microns, said astringent being in an inactive state while dry but being corrosive to the metal of said container and having anti-perspirant properties in the presence of moisture, and

d. an essentially anhydrous liquid vehicle serving to maintain the composition in liquid form and free from moisture while in said container, said astringent powder being suspended and dispersed in said liquid within the container,

e. said liquid vehicle consisting essentially of

1. A liquified propellant which is gaseous at room temperature and atmospheric pressure and non-reactive with the other components present in said package and

2. a non-volatile, non-hygroscopic liquid, said non-hygroscopic liquid being a non-polar, organic liquid having (a) a vapor pressure less than about 24 mm of mercury at 70°F.; (b) a boiling point at atmospheric pressure not lower than 250°F.; (c) a dielectric constant not greater than 10; (d) a specific gravity between 0.7 and 1.6; and (e) a water insolubility such that it will not dissolve more than about 5% of water at 70°F.;

f. said astringent powder and non-volatile, non-hygroscopic liquid being dispensed together from the container in the form of a liquid suspension upon release of the valve and volatilization of the propellant so as to be applied to the skin in the form of a liquid suspension of the astringent powder

g. the astringent being in an amount from 0.2 – 10% by weight of the total composition, the non-volatile, non-hygroscopic liquid being in an amount from 2 to 50% by weight of the total composition and the propellant being in an amount from 50 to 98% by weight of the total composition, the relative amounts of astringent and non-volatile, non-hygroscopic liquid being in an amount from 0.01 to 1 part by weight of astringent per part by weight of the non-volatile, non-hygroscopic liquid such that the product that is applied to the skin is in the form of a liquid suspension of the astringent powder.

3,968,204

ANTIBIOTIC A-2315

Robert L. Hamill, New Ross, and William Max Stark, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 466,327, May 2, 1974, which is a continuation-in-part of Ser. No. 276,546, July 31, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,050

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—121 **2 Claims**

1. The method of promoting growth of animals which comprises administering orally to said animals an effective growth-promoting amount of antibiotic A-2315 factor A, said factor being a white amorphous solid having a specific rotation $[\alpha]_D^{27}$ of −132 ($c = 0.375$ in methanol); having an approximate elemental composition of 61.51 percent carbon, 7.51 percent hydrogen, 8.69 percent nitrogen, and 21.53 percent oxygen; having an approximate molecular weight of 503 as determined by mass spectrometry; having in chloroform the following distinguishable bands in its infrared absorption spectrum: 2.81, 2.99, 3.38, 5.82, 6.02, 6.20, 6.30, 6.40, 6.66, 6.82, 6.94, 7.05, 7.30, 7.71, 8.88, 9.11, 10.41, 10.89 and 11.14 microns; having in 95% ethanol solution an ultraviolet absorption maximum at 214 mμ with an absorptivity value ($E_{1cm}^{1\%}$) of approximately 799; being soluble in methanol, ethanol, and chloroform, but being only slightly soluble in water; releasing alanine upon amino-acid analysis; and containing hydroxyl groups which are capable of esterification.

3,968,205

INFUSION SOLUTION FOR THE TREATMENT OF TACHYCARDIAC DISTURBANCES OF HEART RHYTHM AND USE THEREOF

Johanna Bickel, Nurnberg, Germany, assignor to J. Pfrimmer and Co., Erlangen, Germany

Filed Jan. 23, 1975, Ser. No. 543,456

Claims priority, application Germany, Jan. 31, 1975, 2404620

Int. Cl.[2] A61K *33/14, 33/00, 33/06, 31/165*

U.S. Cl. 424—153 **4 Claims**

1. An infusion solution for the treatment of ventricular tachycardia comprising an effective amount of lidocaine and an antiarrhythmic effective amount of potassium and magnesium ions.

3,968,206

THIOPHOSPHORIC ACID AMIDES AS NEMATOCIDES, INSECTICIDES AND ACARICIDES

Denis Varsanyi, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

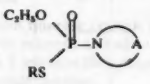
Division of Ser. No. 377,465, July 9, 1973, Pat. No. 3,883,556. This application Mar. 3, 1975, Ser. No. 554,355

Claims priority, application Switzerland, July 13, 1972, 10529/72

Int. Cl.[2] A01N *9/36*

U.S. Cl. 424—200 **3 Claims**

1. A pesticidal composition for combating insects, acarids and nematodes which comprises (1) as active ingredient a pesticidally effect amount of a compound of the formula



wherein R represents n-propyl or n-butyl, and A represents 2-butenylene or 2-pentenylene,,and (2) a carrier.

3,968,207

METHOD OF CONTROLLING FLEAS AND TICKS ON CATS AND DOGS

Michael Stanley Schrider, South Bound Brook; Gordon Paul Poeschel, Kinnelon, both of N.J., and Anthony Morris Annand, St. Ives, Australia, assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 423,623, Dec. 10, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,381

Int. Cl.[2] A61K *31/66*

U.S. Cl. 424—205 **13 Claims**

1. A method for controlling fleas and ticks on cats and dogs which comprises administering to said animals a fleaicidal or tickicidal amount of O,O,O′,O′-tetramethyl O,O′-thiodi-p-phenylene phosphorothioate.

3,968,208

FUNGICIDAL COMPOSITIONS

Jean-Claude Debourge, 3e avenue 335 D Balmont Quest - La Duchere, 69009 Lyon; Jean-Michel Gaulliard, "Le Mont", 69990 Orlienas; Jean Pierre Thiolliere, 7, rue Dr. Mouisset, 69006 Lyon; Jean Georges Abblard, 48, rue de Margnolles Bat. 8, 69300 Caluire; Guy-Bernard Lacroix, 33, Rue Louis-Blanc; Daniel Jean Pillon, 26, rue Duguesclin, both of 69006 Lyon; Jacques Joseph Ducret, 31, cours Gambetta, 69003 Lyon, and Andre Thizy, 61, rue H. Gorjus, 69004 Lyon, all of France

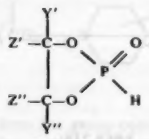
Filed Jan. 11, 1974, Ser. No. 432,492

Claims priority, application France, Jan. 12, 1973, 73.1803; Oct. 19, 1973, 73.37994

Int. Cl.² A01N *9/36*

U.S. Cl. 424—209 **12 Claims**

1. A fungicidal composition for controlling fungus disease in plants, comprising a fungicidally effective amount of a compound of the formula



(I)

in which: Y', Y'', Z' and Z'' are the same or different and represent hydrogen alkyl or halogenated alkyl containing from 1 to 5 carbon atoms and an agriculturally acceptable carrier.

3,968,209

ANTHELMINTIC USE OF PHOSPHORYLATED THIOUREAS

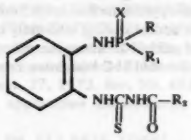
Julius J. Menn, Saratoga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 3, 1975, Ser. No. 619,261

Int. Cl.² A61K *31/66*

U.S. Cl. 424—211 **3 Claims**

1. A method of controlling helminth infections in animals which comprises orally administering to said animal an anthelmintically effective amount of a compound having the formula



in which X is oxygen or sulfur, R and R_1 are independently lower alkyl or lower alkoxy, and R_2 is lower alkoxy.

3,968,210

SYNERGISTIC GERMICIDAL COMPOSITIONS CONTAINING 3,5-DIMETHYL-4-CHLOROPHENOL

Alan G. Schenkel, High Point, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 370,879, June 18, 1973, abandoned. This application Aug. 13, 1975, Ser. No. 604,418

Int. Cl.² A01N *9/02*

U.S. Cl. 424—235 **9 Claims**

1. A bactericidal composition comprising a mixture of

i. 3,5-dimethyl-4-chlorophenol with one or two of

ii. bis-(3,5,6-trichloro-2-hydroxyphenyl)methane,

iii. 2,4,4'-trichloro-2'-hydroxydiphenyl ether and

iv. 3,4',5-tribromo-salicylanilide,

the ratio of (i) to (ii) – (iv) being about 1:1 for a binary mixture and about 1:1:1 for a ternary mixture.

3,968,211

COMPOSITIONS AND METHODS OF USE OF AMIDINES FOR ANTI-ARRHYTHMIC PURPOSES

Donald W. DuCharme, Cooper Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 11, 1974, Ser. No. 441,383

Int. Cl.² A61K *31/535, 31/54, 31/445*

U.S. Cl. 424—248 **14 Claims**

1. A method for treating arrhythmic conditions in mammals which comprises systemically administering to a mammal in need of such treatment an anti-arrhythmic effective amount of a compound

wherein R_1 and R_2 are the same or different and are selected from the group consisting of alkyl of one to eight carbon atoms, inclusive, cycloalkyl of from five to eight carbon atoms, inclusive, adamantyl, phenyl, phenalkyl, where alkyl is from one to three carbon atoms, inclusive, and mono and di-substituted phenyl and phenyl moiety of phenalkyl wherein the substituent(s) are the same or different and are selected from the group consisting of alkyl from one to three carbon atoms, inclusive, alkoxy of from one to three carbon atoms, inclusive, halogen, and trifluoromethyl; R_3 and R_4 taken together with the nitrogen atom to which they are attached, form morpholino and a pharmaceutically acceptable acid addition salt thereof in association with a pharmaceutical carrier.

10. A pharamaceutical composition which comprises an anti-arrhythmic effective amount of a compound

wherein R_1 and R_2 are the same or different and are selected from the group consisting of alkyl of one to eight carbon atoms, inclusive, cycloalkyl of from five to eight carbon atoms, inclusive, adamantyl, phenyl, phenalkyl, where alkyl is from one to three carbon atoms, inclusive, and mono and di-substituted phenyl and phenyl moiety of phenalkyl wherein the substituent(s) are the same or different and are selected from the group consisting of alkyl from one to three carbon atoms, inclusive, alkoxy of from one to three carbon atoms, inclusive, halogen, and trifluoromethyl; R_3 and R_4 taken together with the nitrogen atom to which they are attached, form morpholino and a pharmaceutically acceptable acid addition salt thereof in association with a pharmaceutical carrier.

3,968,212

ORGANOLEPTIC CYCLOPENTAPYRAZINES AS FLAVORING AGENTS

Ivon A. Flament, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

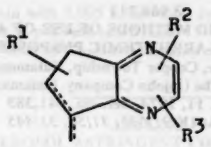
Division of Ser. No. 409,016, Oct. 23, 1973, Pat. No. 3,920,647. This application Apr. 23, 1975, Ser. No. 570,802

Claims priority, application Sweden, Oct. 26, 1972, 15690/72

Int. Cl.² A61K *31/495*

U.S. Cl. 424—250 **1 Claim**

1. A flavouring composition consisting essentially as an active ingredient at least one of the compounds of formula



I

having a double bond at one of the positions indicated by the dotted lines and wherein each of the substituents R^1, R^2, and R^3 represents a hydrogen atom or alkyl having from 1 to 6 carbon atoms.

3,968,213

METHOD OF PREVENTING ASTHMATIC SYMPTOMS

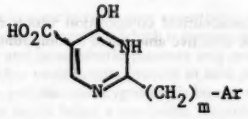
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 299,871, Oct. 24, 1972, Pat. No. 3,883,653. This application Jan. 14, 1975, Ser. No. 541,017

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **3 Claims**

1. A method of preventing asthmatic symptoms in a human who is subject to bronchoconstriction which comprises administering to said human an asthmatic symptom preventing amount of a compound of the formula



or a pharmaceutically acceptable basic salt thereof wherein Ar is furyl and *m* is an integer of 0 to 1.

3,968,214

5-METHYLTHIO-PYRIMIDINE VASODILATORS

Jean-Marie Claverie, Enghien-les-Bains; Gérard Loiseau, Sceaux; Georges Mattioda, Enghien-les-Bains; René Millischer, Pringy, and Francois Percheron, Brevannes, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

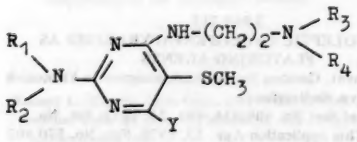
Filed Oct. 12, 1973, Ser. No. 406,129

Claims priority, application France, July 6, 1973, 73.24875

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **13 Claims**

1. A pharmaceutical composition in unit dosage form suitable for use as a vasodilator comprising a pharmaceutically acceptable carrier and 10 mg to 500 mg of a compound of the formula:



(I)

in which Y represents chlorine, R_1 is methyl, R_2 is benzyl, phenyl, chlorophenyl, methyl phenyl, trifluoromethyl phenyl or 3,4-dimethoxy phenyl, R_3 and R_4 are the same and are selected from the group consisting of methyl, ethyl and isopropyl, or a salt thereof with a pharmaceutically acceptable acid.

3,968,215

DRUG HAVING AN ANTI-AGGLUTINATING EFFECT ON PLATELETS AND HYPOCOAGULATING EFFECT

Claude Raby, Chaville, and Jean Choay, Paris, both of France, assignors to Choay S.A., Paris Cedex, France

Filed Aug. 27, 1974, Ser. No. 500,888

Claims priority, application France, Aug. 31, 1973, 73.31668

Int. Cl.² A61K *31/485*

U.S. Cl. 424—260 **21 Claims**

1. A mixture of papaverine or of a physiologically acceptable papaverine salt with a thiosulphate of a physiologically acceptable metal, the two compounds being in respective proportions effective to have an inhibiting effect on hyperadhesion and hyperagglutination on platelets in blood and also have a marked hypocoagulating effect on the kinetic and dynamic coagulability of whole blood.

3,968,216

METHOD OF INHIBITING HISTAMINE ACTIVITY WITH GUANIDINE COMPOUNDS

James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

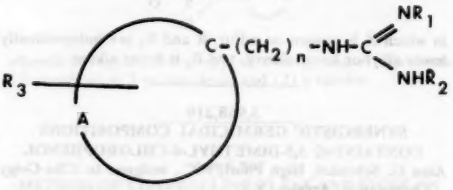
Division of Ser. No. 310,302, Nov. 29, 1972, Pat. No. 3,868,457, which is a continuation-in-part of Ser. No. 80,795, Oct. 14, 1970, abandoned. This application Nov. 25, 1974, Ser. No. 526,767

Claims priority, application United Kingdom, Oct. 29, 1969, 52891/69

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 **5 Claims**

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering internally to an animal requiring inhibition of said H-2 histamine receptors in an amount sufficient to inhibit said H-2 histamine receptors a compound of the formula:



in which:

n is 2 to 5;

A taken together with the carbon and nitrogen atoms to which it is attached forms a pyridine ring;

R_1 is hydrogen, alkyl having 1 to 4 carbon atoms or benzyl;

R_2 is hydrogen, alkyl having 1 to 4 carbon atoms, benzyl, imidazolylethyl or amino or R_1 and R_2 together form an ethylene bridge and

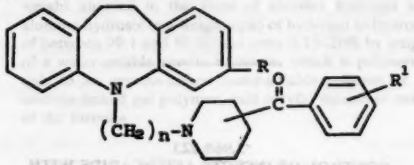
R_3 is hydrogen, alkyl having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms or amino or pharmaceutically acceptable acid addition salts thereof.

3,968,217
5-(3-)SUBSTITUTED-10,11-DIHYDRO-5H-DIBENZ[b,-f]AZEPINES

Grover C. Helsley, Pottersville, N.J., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 462,944, April 22, 1974, Pat. No. 3,886,170. This application Jan. 16, 1975, Ser. No. 541,683
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **8 Claims**

1. A pharmaceutical composition having antidepressant activity, in dosage unit form, comprising a pharmaceutical carrier and an antidepressant amount of a 5-(3-)substituted-10,11-dihydro-5H-dibenz [b,f] azepine having the formula:



wherein;

R is selected from the group consisting of hydrogen, bromine, chlorine, methoxy, trifluoromethyl, sulfamoyl and N,N-dimethylsulfamoyl,

R^1 is selected from the group consisting of hydrogen, lower alkoxy, lower alkyl, trifluoromethyl and halogen having an atomic weight less than 80,

n is a positive integer from 2–4 inclusive, or a pharmaceutically acceptable acid addition salt thereof.

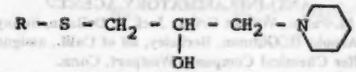
3,968,218
COSMETIC COMPOSITION CONTAINING A HYDROXYLATED AMINO THIOETHER FOR APPLICATION TO THE HAIR AND SKIN

Claude Bouillon, Eaubonne, and Charles Vayssie, Aulnay-sous-Bois, both of France, assignors to L'Oreal, Paris, France

Filed Sept. 27, 1973, Ser. No. 401,380
Claims priority, application Luxemburg, Sept. 29, 1972, 66207
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **18 Claims**

1. A cosmetic composition for combatting the greasy and unaesthetic appearance of the hair and to improve the appearance of the skin comprising in a solvent selected from the group consisting of water, lower alkanol and an aqueous solution of said lower alkanol, 0.1 to 20% by weight of an active component selected from the group consisting of:

1. a compound of the formula:



wherein

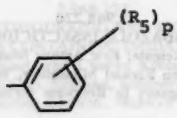
R is selected from the group consisting of

i. linear or branched alkyl having 1–18 carbon atoms,

ii. alkyl having 2–3 carbon atoms and substituted by 1–2 alcohol functions,

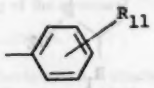
iii. $-(CH_2)_nR_4$ wherein *n* is 0, 1 or 2 and R_4 is phenyl,

iv. $-(CH_2)_qR'_4$ wherein *q* is 0 or 1 and R'_4 is



wherein *p* is 1, 2 or 3 in which instance R_5 is selected from the group consisting of F, Cl, Br and alkoxy having 1–5 carbon atoms or wherein *p* is 1 in which instance R_5 is selected from the group consisting of amino and dimethylamino,

v. $-CH_2-CH_2-NH-Y$ wherein Y is selected from the group consisting of hydrogen, nicotinyl and COR_9 wherein R_9 is selected from the group consisting of hydrogen, alkyl having 1–18 carbon atoms and



wherein R_{11} is selected from the group consisting of H, F, Cl, Br and alkoxy having 1–4 carbon atoms, and

vi. $-(CH_2)_s-COOH$ wherein *s* is 1–10, and

2. a salt of the compound in (1).

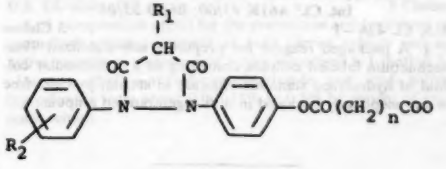
5. The composition of claim 1 wherein said active compound is 1-(2-hydroxy-3-phenylthio propyl) piperidine hydrochloride.

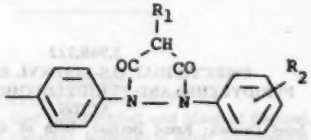
3,968,219
HYDROXY PHENYLBUTAZONE DERIVATIVES AND THEIR PREPARATION

Dieter Rahtz; Henning Koch, and Erich Gerhards, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed July 28, 1975, Ser. No. 599,397
Claims priority, application Germany, July 29, 1974, 2436882
Int. Cl.² A61K *31/415*; C07D *231/34*, *231/36*
U.S. Cl. 424—273 **14 Claims**

1. A hydroxyphenylbutazone derivative of the formula:





wherein *n* is an integer from 1 to 18, inclusive; R_1 is hydrocarbon of 3–9 carbon atoms, unsubstituted or substituted by oxo or interrupted by a thia, sulfinyl, or sulfonyl group, and R_2 is a hydrogen atom, a fluorine atom, a chlorine atom, alkyl of 1 to 4 carbon atoms, or trifluoromethyl.

13. A pharmaceutical composition comprising in unit dosage form an anti-inflammatory effective amount of at least one compound of claim 1 in admixture with a pharmaceutically acceptable carrier adapted for topical administration.

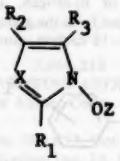
3,968,220

IMIDAZOLE INSECTICIDES

Patrick Mamalis, Reigate; Eric Arthur Stuart La Croix, Dorking, and Solomon Ezekiel Mhasalker, Worcester Park, all of England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 301,677, Oct. 27, 1972, Pat. No. 3,850,953. This application Sept. 5, 1974, Ser. No. 503,367
Claims priority, application United Kingdom, Nov. 13, 1971, 52810/71; Nov. 13, 1971, 52811/71
Int. Cl.² A01N 9/22
U.S. Cl. 424—273 29 Claims

1. An insecticidal composition comprising an insecticidally effective amount of a compound of the formula:



wherein R_1 is hydrogen or alkyl of 1 to 6 carbon atoms, R_2 and R_3 are the same or different and each is hydrogen or alkyl of 1 to 6 carbon atoms,
X is N or N → 0, and
Z is $CONR_4R_5$ wherein R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, benzyl or phenyl and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl, in combination with a suitable carrier.

3,968,221

99M-TECHNETIUM LABELED TIN COLLOID RADIOPHARMACEUTICALS

Harry S. Winchell, Lafayette; Morton Barak, and Parmer Van Fleet, III, both of Walnut Creek, all of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Division of Ser. No. 250,738, May 5, 1972, Pat. No. 3,875,299. This application June 10, 1974, Ser. No. 477,864
Int. Cl.² A61K 43/00; B65D 25/08
U.S. Cl. 424—1 3 Claims

1. A packaged reagent for preparing size-stabilized 99m-technetium labeled colloids consisting of a 1 millimolar colloid of hydrolyzed stannous chloride in sterile, pyrogen-free water aseptically enclosed in a nitrogen-purged ampule.

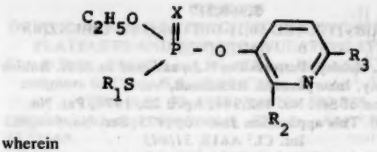
3,968,222

INSECTICIDAL O,S-DIALKYL ESTERS OF PYRIDYLTHIO-AND-PYRIDYLDITHIO-PHOSPHORIC ACIDS

Jozef Drabek; Ernst Beriger, both of Allschwil, and Beat Böhner, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 402,647, Oct. 1, 1973, abandoned. This application Jan. 16, 1975, Ser. No. 541,539
Claims priority, application Switzerland, Oct. 13, 1972, 15040/72; Aug. 24, 1973, 12130/73
Int. Cl.² A01N 9/36
U.S. Cl. 424—200 12 Claims

1. An insecticidal composition comprising (1) as active ingredient, an insecticidally effective amount of a compound of the formula



wherein
R_1 is n-propyl, isobutyl, sec.butyl or n-pentyl,
R_2 is hydrogen, chlorine, bromine, cyano, nitro, (C_1–C_4-alkoxy-carbonyl, mono(C_1–C_4-alkyl)-carbamoyl or di(C_1–C_4-alkyl) carbamoyl,
R_3 represents hydrogen, chlorine, bromine or methyl, and X represents oxygen or sulphur, and (2) a suitable carrier.

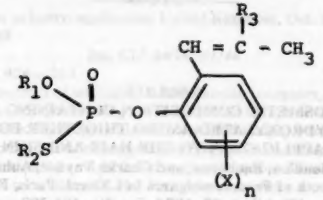
3,968,223

CONTROL OF INSECTS AND ACARIDS WITH O-(2-VINYLPHENYL)-THIOLPHOSPHATES

Manfred Böger, Haltingen, Germany, and Jozef Drabek, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 449,416, March 8, 1974, Pat. No. 3,898,306. This application May 27, 1975, Ser. No. 581,069
Claims priority, application Switzerland, Mar. 15, 1973, 3776/73; Jan. 30, 1974, 1261/74
Int. Cl.² A01N 9/36
U.S. Cl. 424—219 10 Claims

2. A method for combatting insects or acarids which comprises applying thereto an insecticidally or acaricidally effective amount of a compound of the formula



wherein R_1 represents methyl or ethyl; R_2 represents n-propyl, isopropyl, isobutyl, sec.butyl or n-amyl; R_3 repesents hydrogen or methyl; X represents hydrogen, halogen or methyl; and *n* is 1 to 3.

3,968,224

3-(4′-CHLOROPHENYL)-5-METHYL-4,5-DIHYDRO-1,2,4-OXADIAZOLE, ITS USE AS AN ANTI-INFLAMMATORY AGENT

Ferenc M. Pallos, Walnut Creek; Jack R. DeBaun, Sunnyvale, and Arnold D. Gutman, Berkeley, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 572,686, April 28, 1975, abandoned. This application Nov. 17, 1975, Ser. No. 632,603
Int. Cl.² A61K 31/42
U.S. Cl. 424—272 1 Claim

1. A method of treatment of an inflammatory condition in a mammal comprising administering to said mammal a therapeutically effective amount of 3-(4′-chlorophenyl)-5-methyl-4,5-dihydro-1,2,4′-oxadiazole.

3,968,225

PREPARATION OF SPHEROIDAL ALUMINA PARTICLES

Jacques Maurice Jules Ghislain André; Raymond Mark Cahen, both of Brussels; Henri Robert Debus, Meise; Rene Odon Lammers, Brussels, and Hugo Johannes van Thillo, Grimbergen, all of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Feb. 10, 1975, Ser. No. 548,217

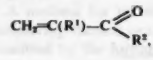
Claims priority, application Luxemburg, Feb. 18, 1974, 69408

Int. Cl.² C01F 7/02

U.S. Cl. 423—626 10 Claims

1. A process for preparing alumina beads from alumina hydrogel and alumina hydrosol comprising

a. preparing an aqueous mixture containing from 5–30% by weight alumina in the form of alumina hydrogel and alumina hydrosol in a weight ratio of hydrogel to hydrosol of between 99:1 and 50:50 and from 0.25–20% by weight of a water-soluble acrylic monomer which is polymerizable to an uncross-linked water-soluble polymer or an uncross-linked gel polymer, said acrylic monomer being of the formula



wherein R^1 is selected from a group consisting of —H and $—CH_3$ and R^2 is selected from the group consisting of $—OR^3$ and $—NR^3R^4$, wherein R^3 and R^4 are selected from the group consisting of —H and a hydrophylic radical,

b. dispersing said aqueous mixture as droplets into a substantially water-immiscible fluid having a temperature of 50°–105°C. at atmospheric pressure to effect polymerization of said aqueous mixture,

c. maintaining said droplets in said fluid until individual hard beads are formed, and

d. drying and calcining said beads.

3,968,226

3-HETEROCYCLIC THIOMETHYLCEPHALOSPORINS AS ANTIBACTERIAL AGENTS

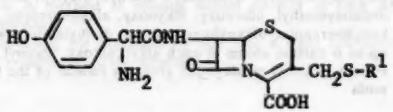
George L. Dunn, Wayne, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 262,903, June 14, 1972, which is a continuation-in-part of Ser. No. 116,598, Feb. 18, 1971, which is a continuation-in-part of Ser. No. 99,296, Dec. 17, 1970, abandoned. This application Sept. 30, 1974, Ser. No. 510,191

Int. Cl.² A61K 31/54

U.S. Cl. 424—246 10 Claims

1. A pharmaceutical composition comprising an antibacterially-effective amount of a compound of the formula



in which:

R^1 is tetrazol-5-yl, 1,3,4-thiadiazol-2-yl, 1,3,4-oxadiazol-2-yl, 1,2,4-triazol-3-yl, or 1,2,3-triazol-5-yl, each of such groups being unsubstituted or substituted with one or two lower alkyl groups of one to four carbon atoms,

or a nontoxic, pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier therefor.

3,968,227

GUANIDINO, THIOUREIDO AND ISOTHIOUREIDO DERIVATIVES CONTAINING IMIDAZOLE GROUPS

Graham John Durant, and Charon Robin Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

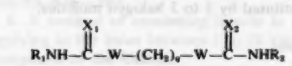
Filed Jan. 22, 1975, Ser. No. 542,971

Claims priority, application United Kingdom, Feb. 7, 1974, 5596/74

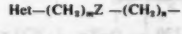
Int. Cl.² C07D 233/64

U.S. Cl. 424—273 19 Claims

1. A compound of the formula:



wherein R_1 and R_2, which may be the same or different, each represent a grouping of the structure:



wherein Het is imidazole which is attached at a ring carbon and which is optionally substituted by lower alkyl or halogen; Z is sulphur or a methylene group; *m* is 0, 1 or 2; *n* is 2 or 3 and the sum of *m* and *n* is 3, 4 or when the adjoining X_1 or X_2 is sulphur, 2; X_1 and X_2, which may be the same or different, are each sulphur or NY wherein Y is hydrogen or lower alkyl; W is NH, and when X_1 and X_2 are NH, W may also be sulphur; and *q* is an integer from 2 to 8; or a pharmaceutically acceptable acid addition salt thereof.

3,968,228

4-NITRO-5-CYANOIMIDAZOLES AS COCCIDIOSTATS

Dale R. Hoff, Basking Ridge; Peter Kulsa, Plainfield; Helmut H. Mrozik, Matawan, and Edward F. Rogers, Middletown, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 415,480, Nov. 13, 1973, abandoned, which is a continuation of Ser. No. 177,470, Sept. 2, 1971, abandoned. This application Feb. 10, 1975, Ser. No. 548,655

Int. Cl.² A61K 31/415

U.S. Cl. 424—273 3 Claims

1. A composition useful for the prevention and treatment of coccidiosis which comprises an inert carrier vehicle and an active ingredient wherein said active ingredient is 1-methyl-2-(1-acetoxyethyl)-4-nitro-5-cyanoimidazole and said active ingredient is from about 0.00025% to 0.5% by weight of said composition.

3,968,229

ANTIMYCOTIC COMPOSITIONS

Wolfgang Krämer; Karl Heinz Büchel, and Manfred Plempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

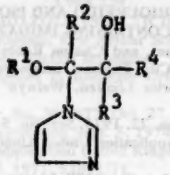
Filed June 21, 1974, Ser. No. 481,660

Claims priority, application Germany, June 30, 1973, 2333355

Int. Cl.² A61K 31/415

U.S. Cl. 424—273 36 Claims

19. A method of treating mycoses in humans and animals which comprises administering to a human or animal in need thereof an antimycotically effective amount of a compound of the formula



or a pharmaceutically acceptable, nontoxic salt thereof, wherein

R^1 is phenyl substituted by 1 to 3 halogen moieties;
R^2 is hydrogen;
R^3 is hydrogen; and
R^4 is lower alkyl;

in combination with a pharmaceutically acceptable, nontoxic, inert diluent or carrier.

3,968,230
COMPOSITIONS CONTAINING BENZODIAZEPINDIONES AND METHOD OF USE

William Blythe Wright, Jr., Woodcliff Lake, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 464,424, April 26, 1974, abandoned. This application June 16, 1975, Ser. No. 587,012

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **3 Claims**

1. A method of treating anxiety in a warm-blooded animal which comprises administering internally to said warm-blooded animal an anti-anxiety amount of 1,2,3,11a-tetrahydro-10-methyl-5H-pyrrolo[2,1-c][1,4]benzodiazepin-5,11(10H)-dione and a pharmaceutically acceptable carrier therefor.

3,968,231
4-ARYL-1,2,3,4-TETRAHYDROPYRROLO(3,4-B)INDOLES FOR TREATING SCHIZOPHRENIC MANIFESTATIONS

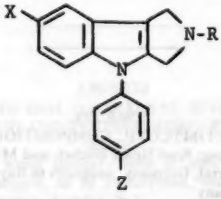
Willard H. Welch, Jr., North Stonington, and Charles A. Harbert, Waterford, both of Conn., assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 456,641, April 1, 1974. This application June 23, 1975, Ser. No. 589,385

Int. Cl.² A61K *31/40*

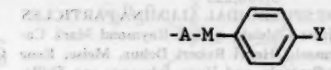
U.S. Cl. 424—274 **6 Claims**

1. A method for treating schizophrenic manifestations in a mammal which comprises administering to a mammal having said manifestations, a tranquilizing amount of a compound of the formula

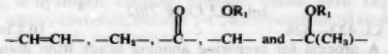


or a pharmaceutically acceptable acid addition salt thereof wherein

X is selected from the group consisting of fluoro, chloro, bromo, methyl and hydrogen;
Z is selected from the group consisting of fluoro, chloro, methoxy and hydrogen; and
R is selected from the group consisting of alkyl having 1 to 6 carbon atoms, benzyl, and substituted alkylene of the formula



wherein A is alkylene having 1 to 5 carbon atoms, M is selected from the group consisting of



wherein R_1 is selected from the group consisting of hydrogen and alkanoyl having 2 to 5 carbon atoms and Y is selected from the group consisting of fluoro, chloro, methyl and hydrogen.

3,968,232
N-METHYL-N-ALKOXYCARBONYLSULPHENYL-CARBAMATES

Peter Siegle, Cologne; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath-Steinenbruck, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

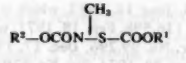
Filed Oct. 29, 1974, Ser. No. 518,837

Claims priority, application Germany, Nov. 20, 1973, 2357930

Int. Cl.² A01N *9/12*

U.S. Cl. 424—277 **10 Claims**

1. An N-methyl-N-alkoxycarbonylsulphenyl-carbamate of the formula

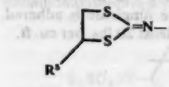


in which

R^1 is C_{1-6} alkyl, and
R^2 is phenyl; naphthyl; indanyl; phenyl, naphthyl or indanyl substituted by trihalomethyl, halogen, nitro, nitrile, dioxanyl, dioxolanyl, methyl-dioxanyl, methyl-dioxolanyl, alkyl, cyclopentyl, cyclohexyl, alkenyl, alkynyl, alkoxy, dialkoxymethyl, alkenoxy, alkynoxy, alkylmercapto, alkenylmercapto, alkynylmercapto or dialkylamino, with up to 6 carbon atoms in each alkyl, alkoxy, alkenyl, alkenoxy, alkynyl or alkynoxy group; a radical of the formula

in which

R^3 and R^4 are each alkyl or alkylthio of 1 to 6 carbon atoms, nitrile or phenyl; or



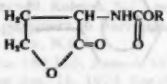
in which
R^5 is hydrogen or C_{1-6} alkyl.

3,968,233
α-AMINO-γ-BUTYROLACTONES AS SEDATIVES

Aldo Garzia, Milan, Italy, assignor to Istituto Chemioterapico Italiano, Milan, Italy

Division of Ser. No. 421,899, Dec. 5, 1973, abandoned. This application Aug. 6, 1975, Ser. No. 602,163
Int. Cl.² A61K *31/34, 31/365*
U.S. Cl. 424—279 **5 Claims**

1. A method for treating animals in need of sedation by administering thereto orally or intraperitoneally a compound represented by the formula



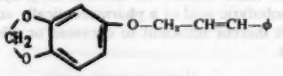
where R is alkyl of 3–5 carbon atoms, at a dosage of about 200 mg/kg to 2000 mg/kg.

3,968,234
CINNAMYL-SESAMOL DERIVATIVES AS INSECT CHEMOSTERILANTS

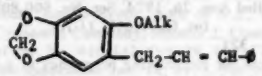
Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 5, 1975, Ser. No. 555,488
Int. Cl.² A01N *9/28;* **C07D** *317/06*
U.S. Cl. 424—282 **18 Claims**

1. The compound of the structure



14. A method of causing sexual sterility in flies, which comprises
providing for ingestion by the flies a food containing a compound of the structure



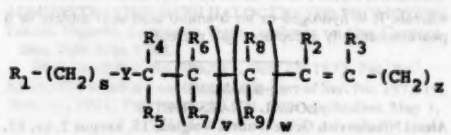
wherein Alk is an alkyl radical containing 1 to 4 carbon atoms, in an amount insufficient to kill the flies but sufficient to induce sexual sterility therein.

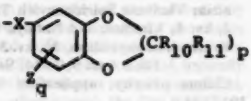
3,968,235
COMPOSITION AND METHOD FOR COMBATING INSECTS WITH ALKYLENEDIOXYPHENYL DERIVATIVES

Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

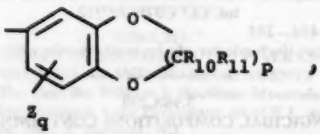
Continuation-in-part of Ser. No. 207,633, Dec. 13, 1971, Pat. No. 3,829,442. This application May 23, 1974, Ser. No. 472,918
Claims priority, application Switzerland, Dec. 14, 1970, 18472/70; Sept. 17, 1971, 13599/71; Oct. 6, 1971, 14521/71; Nov. 11, 1971, 16357/71
Int. Cl.² A01N *9/28*
U.S. Cl. 424—282 **12 Claims**

1. A method of combating insects in a locus comprising applying to the locus between 1 to 10 kilograms/hectare of a compound of the formula:





wherein
Z is alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 12 carbon atoms, alkoxy of 1 to 5 carbon atoms, alkenyloxy of 2 to 12 carbon atoms, formyl, alkyl carbonyl of 2 to 6 carbon atoms, alkoxy carbonyl of 2 to 6 carbon atoms, mono- or di-alkyl substituted carbamoyl each alkyl substituent of which being of 1 to 5 carbon atoms, alkoxy methylene of 2 to 6 carbon atoms, alkylthio of 1 to 5 carbon atoms, fluoro, chloro, bromo, cyano or nitro,
R_{10} and R_{11} are independently hydrogen or alkyl of 1 to 5 carbon atoms,
p is 1 or 2,
q is 0 or 1,
R_1 is alkyl of 1 to 11 carbon atoms, an acylcic hydrocarbon of up to 11 carbon atoms having one or two double bonds or one triple bond, cycloalkyl of 4 to 7 carbon atoms, cycloalkyl of 4 to 7 carbon atoms substituted by alkyl of 1 to 5 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms substituted by alkyl of 1 to 5 carbon atoms, phenyl or



R hd 2, R_3, R_4, R_5, R_6, R_7, $R_8$and R_9 are independently hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 6 carbon atoms,
Y is oxygen or sulfur,
X is oxygen, sulfur, $—OCH_2—$ or $—SCH_2—$,
s, *v* and *w* are independently 0 or 1, and
z is 1, 2 or 3.

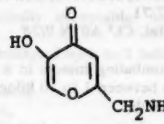
3,968,236

2-AMINOMETHYL-5-HYDROXY-4H-PYRAN-4-ONE AND DERIVATIVES THEREOF

Joseph G. Atkinson, Montreal; Joshua Rokach, Laval, and Clarence S. Rooney, Beaconsfield, all of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 22, 1975, Ser. No. 542,977
Int. Cl.² C07D 309/22; A01N 9/28
U.S. Cl. 424—283 6 Claims

1. A compound having the structural formula:



wherein R is hydrogen or an α-amino acid acyl moiety or a pharmaceutically acceptable salt thereof.

3,968,237

LOCAL ANAESTHETIC

Alexei Nikolaevich Grinev, ulitsa Volgina, 15, korpus 2, kv. 57, Moscow; Alexandr Alexandrovich Stolyarchuk, ulitsa R. Ljuxemburg, 1, kv. 12, Vinnitsa; Pavel Alexandrovich Galenko-Yaroshevsky, ulitsa Kosmonavtov, 52, kv. 14, Vinnitsa; Vladimir Spiridonovich Tantsjura, ulitsa Litvinenko, 2, kv. 5, Vinnitsa, and Natalya Vitalievna Arkhangelskaya, Krasnoprudnaya ulitsa, 26, kv. 36, Moscow, all of U.S.S.R.

Filed Apr. 9, 1974, Ser. No. 459,418
Claims priority, application U.S.S.R., Apr. 13, 1973, 1912333
Int. Cl.² A61K 31/34
U.S. Cl. 424—285 3 Claims

1. A local anaesthetic composition comprising an amount sufficient to produce a local anaesthetic effect of 2-methyl-3-carbethoxy-4-chloro-5-hydroxy-6-dimethylaminomethylbenzofuran in the form of a salt selected from the group consisting of the tartaric and hydrochloric acid salts and in a pharmaceutically acceptable aqueous solvent.

3,968,238

5-ACETYL FURFURYLESTER OF CHRYSANTHEMUMIC ACID

Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 399,418, Sept. 21, 1973, which is a division of Ser. No. 112,061, Feb. 2, 1971, Pat. No. 3,796,730, which is a continuation-in-part of Ser. Nos. 691,173, Dec. 18, 1967, abandoned, and Ser. No. 809,036, March 20, 1969, abandoned, which is a division of Ser. No. 629,422, April 10, 1967, abandoned, and a continuation-in-part of Ser. No. 691,173. This application July 30, 1975, Ser. No. 600,425
Claims priority, application Japan, June 28, 1966, 41-42289; Aug. 24, 1966, 41-55930; Dec. 23, 1966, 41-84365
Int. Cl.² C07D 307/12
U.S. Cl. 424—285 5 Claims

1. 5-acetylfurfurylester of chrysanthemumic acid.

3,968,239

FUNGICIDAL COMPOSITIONS CONTAINING A PHTHALONITRILE

Fred E. Ferguson, and Robert J. Bell, both of Marysville, Ohio, assignors to O. M. Scott & Sons Company, Marysville, Ohio

Filed Mar. 7, 1975, Ser. No. 556,488
Int. Cl.² A01N 9/20, 9/24
U.S. Cl. 424—304 8 Claims

1. A fungicidal composition in granular form comprising a mixture of (a) tetrachloroisophthalonitrile, (b) for each 1275 grams of the phthalonitrile, from about 200 to 1800 ml of octyl phenoxy polyethoxy ethanol having 9 to 10 oxyethylene groups, and (c) a carrier to which the fungicide is adhered, said carrier having a bulk density of at least 20 lbs. per cu. ft.

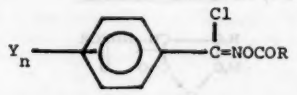
3,968,240

α-CHLORO-O-ACYLBENZALDOXIME DERIVATIVES AS SLIME CONTROL AGENTS

Nobuyasu Takahashi, Koshigaya; Taiichi Yamaguchi, Kasuhabe; Junei Sakaguchi, Kawasaki, and Hideo Hamada, Soka, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 341,651, March 15, 1973, abandoned. This application May 21, 1975, Ser. No. 579,744
Claims priority, application Japan, Mar. 16, 1972, 47-26748
Int. Cl.² A01N 9/24
U.S. Cl. 424—311 26 Claims

1. A slime control composition for paper and pulp manufacturing comprising an organic solvent selected from the group consisting of diethylene glycol monomethyl ether, trimethyl benzene, dimethylformamide, and xylene and as an effective component in said composition about 2.5 to about 40 parts per million of an α-chloro-o-acylbenzaldoxime derivative represented by the formula



wherein Y represents chlorine, nitro, methyl, isopropyl, methoxy, dimethylamino, propionyloxy or acetoxy; R represents methyl, ethyl or monochloromethyl; and *n* represents 0 or an integer of 1–3.

3,968,241

METHOD OF TREATING CARDIAC ARRHYTHMIAS AND OF IMPROVING MYOCARDIAL CONTRACTILITY AND SYSTOLIC RHYTHM WITH CARNITIVE OR A PHARMACEUTICALLY ACCEPTABLE SALT THEREOF

Stephen L. DeFelice, 430 Topping Hill Road, Westfield, N.J. 07090

Continuation-in-part of Ser. No. 303,772, Nov. 6, 1972, Pat. No. 3,830,931. This application July 2, 1974, Ser. No. 485,301
The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.
Int. Cl.² A61K 31/195
U.S. Cl. 424—319 7 Claims

1. A method of treating cardiac arrhythmias in humans and animals which comprises administering to a human or an animal in need thereof an amount of β-hydroxy-γ-trimethylaminobutyric acid or a pharmaceutically acceptable nontoxic salt thereof sufficient to decrease or eliminate the arrhythmia.

3,968,242

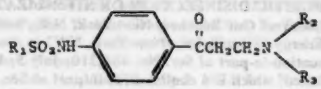
SULFONAMIDOAMINOPROPIOPHENONE INTERCEPTIVE PROCESS

Duane G. Gallo, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Aug. 26, 1974, Ser. No. 500,808
Int. Cl.² A61K 31/18
U.S. Cl. 424—321 6 Claims

1. A process for interrupting pregnancy in a pregnant female mammal capable of resorbing an implanted fertilized ovum comprising orally or parenterally administering to said mammal an interceptive agent during the interceptive stage in an effective dose to cause resorption of said implanted fertilized ovum and said interceptive agent is a p-sul-

fonamidoaminopropiophenone of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein

R_1 is methyl or ethyl;

R_2 is methyl; and

R_3 is lower alkyl of 1 to 5 carbon atoms inclusive or aralkyl up to 10 carbon atoms inclusive.

3,968,243

SUBSTITUTED GUANIDINE COMPOUNDS IN THE TREATING OF ARRYTHMIAS

Robert Arthur Maxwell, Raleigh, N.C., and Eric Walton, Wrotham, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

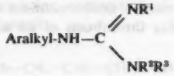
Division of Ser. No. 150,185, June 4, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 434,947

Claims priority, application United Kingdom, June 5, 1970, 27220/70; June 5, 1970, 27221/70; June 5, 1970, 27222/70

Int. Cl.² A61K *31/155*

U.S. Cl. 424—326 26 Claims

1. A method for the treatment of cardiac arrhythmias in a mammal which has had cardiac arrythmias which comprises the administration to the mammal of a non-toxic, effective antiarrhythmic treatment amount of a pharmaceutically acceptable acid addition salt of the compound of the formula



wherein 'Aralkyl' is selected from the group consisting of unsubstituted benzyl and β-phenethyl, two of the groups R^1, R^2 and R^3 are methyl and the third group is hydrogen, provided always that R^2 and R^3 are both methyl and R^1 is hydrogen when 'Aralkyl' is unsubstituted benzyl.

3,968,244

CHEMOSTERILANT AND LARVICIDAL IMIDOTHIOCARBONATES

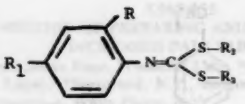
William Wayne Brand, Hopewell, and Michael Stanley Schrider, South Bound Brook, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 410,842, Oct. 28, 1973, Pat. No. 3,892,761. This application Jan. 14, 1975, Ser. No. 540,935

Int. Cl.² A01N *9/20, 9/22*

U.S. Cl. 424—330 10 Claims

1. A method of controlling ticks which comprises contacting said ticks with a fecundity-suppresing amount of a dithioimidocarbonate ester of the formula:



wherein R is chloro or methyl, R_1 is chloro or methyl, and R_2 and R_3 are each selected from the group consisting of lower alkyl, lower alkylthiomethyl, allyl, 2-chloroallyl, 2-methylallyl, propargyl, benzyl and 4-pyridylmethyl with the proviso that R_2 and R_3 cannot both be lower alkyl.

3,968,245

SYMPATHOMIMETIC TOPICAL AND PERCUTANEOUS ADMINISTRATION WITH HALOGENATED PROMOTERS

Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 406,011, Oct. 12, 1973, Pat. No. 3,891,757, which is a continuation-in-part of Ser. No. 197,919, Nov. 11, 1971, Pat. No. 3,787,571. This application May 1, 1975, Ser. No. 573,468

Int. Cl.² A61K *31/135, 31/045, 47/00*

U.S. Cl. 424—330 6 Claims

1. A pharmaceutical composition of matter comprising a first ingredient selected from the group of pharmaceutically acceptable topical and percutaneous absorption promoters consisting of trichloroethanol, trifluoroethanol and mixtures thereof, and about 0.01 to 30% of at least one local, topically administered sympathomimetic drug as a second ingredient, and wherein when topically administered, the first ingredient is a promoter for increasing topical retention and percutaneous absorption of a therapeutically effective amount of the second sympathomimetic ingredient.

3,968,246

DISINFECTING WITH N-TRIMETHYLBENZYL ETHYLENEDIAMINE

John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 549,170, Feb. 12, 1975, which is a division of Ser. No. 360,448, May 15, 1974, Pat. No. 3,886,284, which is a continuation-in-part of Ser. No. 291,824, Sept. 25, 1972, Pat. No. 3,837,197, which is a continuation-in-part of Ser. No. 130,783, April 2, 1971, Pat. No. 3,821,407. This application July 10, 1975, Ser. No. 594,581

Int. Cl.² A61K *31/135*

U.S. Cl. 424—330 3 Claims

1. A method of disinfecting a surface which comprises applying to said surface an effective amount sufficient to disinfect said surface of N-trimethylbenzyl ethylenediamine.

3,968,247

SUBSTITUTED OR UNSUBSTITUTED P-ALKANOYL TOLUENES AS ANTI-DIABETIC AGENTS

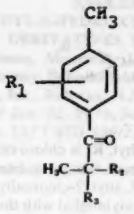
Robert S. Ho, Denville; William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, all of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 546,756, Feb. 3, 1975, Pat. No. 3,924,003, which is a continuation-in-part of Ser. No. 445,265, Feb. 25, 1974, abandoned. This application Aug. 20, 1975, Ser. No. 605,973

Int. Cl.² A61K *31/12*

U.S. Cl. 424—331 5 Claims

1. A method for treating diabetes which comprises administering to a mammal in need of said treatment an anti-diabetic effective amount of a compound of the formula



where

R_1 represents hydrogen, halo having an atomic weight of about 19 to 36, or straight chain lower alkoxy, and

R_2 and R_3 each independently represent alkyl having 1 to 2 carbon atoms.

3,968,248

METHOD AND SPORICIDAL COMPOSITIONS FOR SYNERGISTIC DISINFECTION OR STERILIZATION

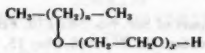
Raymond Marcel Gut Boucher, New York, N.Y., assignor to Wave Energy Systems, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 155,233, June 21, 1971, abandoned. This application July 16, 1975, Ser. No. 596,372

Int. Cl.² A01N *9/24*

U.S. Cl. 424—333 3 Claims

1. A sterilization and disinfectant composition comprising from about 0.1% to about 5% of glutaraldehyde and from about 0.01 to 1% of a nonionic surface active agent which is an ethoxylate of isomeric linear alcohols having the following formula:



wherein n is 9 to 13 and x is 9 to 13.

3,968,249

METHOD OF TREATING MALIGNANT NEOPLASTIC DISEASE

Jack Bernstein, New Brunswick, and Barbara Stearns, Highland Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 253,031, Jan. 22, 1963, abandoned, which is a continuation-in-part of Ser. No. 862,452, Dec. 29, 1959, abandoned. This application May 15, 1968, Ser. No. 729,450

Int. Cl.² A61K *31/17*

U.S. Cl. 424—322 10 Claims

1. A method of treating malignant neoplastic disease which comprises administering to a host afflicted with such disease a composition comprising about 50 mg. to about 4 gm. of hydroxyurea in pharmaceutical dosage form.

3,968,250

METHOD AND SPORICIDAL COMPOSITIONS FOR SYNERGISTIC DISINFECTION OR STERILIZATION

Raymond Marcel Gut Boucher, New York, N.Y., assignor to Wave Energy Systems, Inc., New York, N.Y.

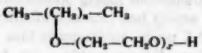
Continuation-in-part of Ser. No. 486,210, July 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 155,233, June 21, 1971, abandoned. This application July 16, 1975, Ser. No. 596,289

The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.

Int. Cl.² A01N *9/24*

U.S. Cl. 424—333 5 Claims

1. A method of disinfecting and sanitizing fowl eggs comprising contacting said eggs with a sufficient amount of a composition to disinfect and sanitize comprising from about 0.02% to about 5% of glutaraldehyde and from about 0.01% to 1% of a nonionic surface active agent which is an ethoxylate of isomeric linear alcohols having the following formula:



wherein n is 9 to 13 and x is 9 to 13.

3,968,251

ARYLACETYLENE COMPOUNDS AS ANTITHROMBOTIC AGENTS

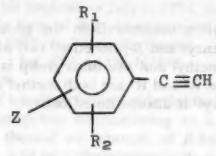
William B. Lacefield, and Winston S. Marshall, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 485,877, July 5, 1974, Pat. No. 3,928,604. This application Aug. 25, 1975, Ser. No. 607,173

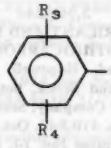
Int. Cl.² A61K *31/085, 31/09, 31/015*

U.S. Cl. 424—340 6 Claims

1. A method of treating vascular thrombosis in warm-blooded animals which comprises administering to a warm-blooded animal in need of such treatment an amount effective for treating vascular thrombosis of an arylacetylene of the formula,



wherein R_1 and R_2 are monovalent groups independently selected from the group consisting of hydrogen, C_1–C_3 alkyl, and C_1–C_3 alkoxy; and Z is a monovalent group of the formula,



wherein R_3 and R_4 are monovalent groups independently selected from the group consisting of hydrogen, C_1–C_3 alkyl, and C_1–C_3 alkoxy, with the proviso that at least one of R_1, R_2, R_3, and R_4 must be other than hydrogen.

3,968,252

DERIVATIVES OF CERTAIN GERANYL PHENYL ETHERS AND THEIR USE IN CONTROLLING INSECTS

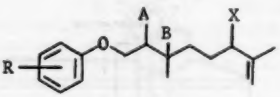
Ferenc M. Pallos, Walnut Creek, and Chien K. Tseng, El Cerriot, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 376,772, July 5, 1973, Pat. No. 3,888,987, which is a division of Ser. No. 198,018, Nov. 4, 1971, Pat. No. 3,772,365. This application Mar. 6, 1975, Ser. No. 555,764

Int. Cl.[2] A01N *9/12, 9/14*

U.S. Cl. 424—337 7 Claims

1. A method of controlling *Tenebrio molitor* comprising applying thereto at any stage of their development a metamorphosis hindering amount of a compound of the formula:



in which R is 4-alkyl having 1 to 4 carbon atoms; or 4-alkylthio having 1 to 4 carbon atoms; X is chlorine or bromine; and A and B together form a bond.

3,968,253

FEED ADDITIVE FOR RUMINANTS

Heidrun Bertram, Grossauheim; Rudolf Fahnenstich, Mombris, and Herbert Tanner, Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

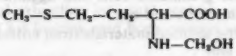
Filed Feb. 13, 1974, Ser. No. 441,983

Claims priority, application Germany, Feb. 16, 1973, 2307836

Int. Cl.[2] A23X *1/22*

U.S. Cl. 426—2 5 Claims

1. A process of supplying methionine to a ruminant comprising feeding the ruminant a basic feed composition including an additive consisting essentially of N-hydroxymethyl methionine of the formula



or a non-toxic salt thereof.

3,968,254

METHOD OF PREPARING FEED GRAIN COMPOSITIONS

Robert A. Rhodes; William L. Orton, and Bernard A. Weiner, all of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 23, 1975, Ser. No. 589,656

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—18 10 Claims

1. A method of preparing animal feed grain compositions comprising the steps of:

a. mixing from 2 to 15 parts dry weight basis (dwb) of animal feedlot waste (FLW) with 100 parts dwb of fragmented grain (FG) and an amount of water such that the resulting mixture contains from 35% to 45% moisture; and

b. aerobically fermenting the mixture resulting from step (a) while submitting said mixture to a tumbling action for a time sufficient to obtain a pH in the mixture of from 4 to 5.

3,968,255

METHOD OF PREPARING ANIMAL FOOD OF INCREASED PALATABILITY

Gerhard Julius Haas, Woodcliff Lake, N.J., and Joaquin Castro Lugay, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 461,831, April 8, 1974, Pat. No. 3,857,968, which is a continuation-in-part of Ser. No. 346,364, March 29, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,620

The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.[2] A23K *1/10*

U.S. Cl. 426—33 25 Claims

1. A process for improving the palatability of an animal food which comprises:

conditioning an aqueous meat slurry, comprising fat and protein, by emulsifying the fat in the meat slurry with the water present in the slurry, and treating the meat slurry, containing the emulsified fat and the protein, with lipase and protease in amounts, under conditions of pH and temperature, and for a time, effective to cause an enzymatic reaction resulting in the production of a palatability improving composition; and

incorporating the palatability improving composition into the animal food in an amount which is effective to increase the palatability of the animal food.

3,968,256

PREPARATION OF COTTAGE CHEESE

Edmond L. Sing, 3860 Cheviot Place, Indianapolis, Ind. 46226

Continuation of Ser. No. 109,697, Jan. 25, 1971, abandoned. This application July 2, 1973, Ser. No. 375,329

Int. Cl.[2] A23C *19/02, 19/10*

U.S. Cl. 426—38 11 Claims

1. A convenient method for improving flavor and keeping characteristics of cottage cheese which comprises:

adding to the cottage cheese, or its creaming mixture, sufficient culture preparation of *Streptococcus diacetilactis*, said culture preparation selected from the group consisting of freeze dried culture, frozen concentrated cells, and freeze dried concentrated cells, to cause a concentration of cells in the cottage cheese from 1.0×10^8 cells per gram to 2×10^8 cells per gram of cottage cheese.

3,968,257

PROCESSES FOR THE PRODUCTION OF PROTEIN-CONTAINING NUTRIMENTS AND FODDERS

Hans Müller, 8708 Mannedorf, Zurich, Switzerland

Continuation-in-part of Ser. No. 392,806, Aug. 29, 1973, abandoned. This application June 9, 1975, Ser. No. 585,291

Claims priority, application Switzerland, Sept. 6, 1972, 13177/72; Oct. 13, 1972, 15058/72; Apr. 16, 1973, 5384/73

Int. Cl.[2] A23C *21/00*

U.S. Cl. 426—41 5 Claims

1. In a process for the production of an essentially solid protein-rich nutriment and fodder from whey which comprises propagating a lactose-fermenting yeast of the genus Saccharomyces in a liquid whey, the improvement which comprises cultivating the yeast in a whey containing at least a substantial portion of its original soluble proteins and, after conclusion of the propagation, separating the solids from the resulting brew by means of an ultrafilter provided with one or more ultrafiltration membranes that are essentially impervious to soluble proteins, and subsequently drying the said solids.

3,968,258

PROCESS FOR THE PRODUCTION OF HIGH-PROTEIN PASTA UTILIZING DRIED YEAST AND THE RESULTING PRODUCT

Cavit Akin, Warrenville, and Philip George Schnell, Wheaton, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed June 9, 1975, Ser. No. 584,898
Int. Cl.² A23L 1/16
U.S. Cl. 426—62 **17 Claims**

1. In a process of preparing pasta wherein flour and liquid are mixed to form a pasta dough which is thereafter shaped and dried, the improvement which comprises incorporating a protein-containing material selected from the group consisting of (1) Torutein dried yeast and (2) Torutein dried yeast and plant protein mixture, into said pasta dough; said yeast being an amount sufficient to hold the texture of the pasta together, reduce the amount of solubles lost during cooking and impart retort stability.

3,968,259

SILAGE PRESERVATIVE

Jack P. Henry, and James D. Myers, both of Eagle Grove, Iowa, assignors to M & M Livestock Products Co., Inc., Eagle Grove, Iowa

Filed Mar. 6, 1975, Ser. No. 555,812
Int. Cl.² A23K 3/03
U.S. Cl. 426—63 **8 Claims**

1. A silage preservative comprising an enzyme mixture of protease, amylase, and gumase in combination with mixture (*a*) which contains calcium propionic and salts of potassium, sodium and magnesium, and mixture (*b*) containing phosphorus, Fe, Cu, Co, I, Mn, and Zn wherein said phosphorus is present as a phosphate, said iodine is present as iodide ion, wherein each of said Fe, Cu, Co, Mn and Zn is present as a salt or an oxide of the metal, wherein said mixture (*a*) comprises 90 to 98 percent by weight of the preservative and said mixture (*b*) comprises 1.0 to 5.0 percent by weight of the preservative; wherein said preservative is capable of effecting an 8 percent increase in the amount of digestable protein contained in silages after storage.

6. A method of preserving digestable protein in silages comprising mixing a preservative with silages, said silages being grain silages, haylages, oatlages or mixtures thereof;

wherein said preservative comprises an enzyme mixture of protease, amylase, and gumase in combination with mixture (*a*) which contains calcium propionate and salts of potassium, sodium and magnesium, and mixture (*b*) containing phosphorus, Fe, Cu, Co, I, Mn, and Zn wherein said phosphorus is present as a phosphate, said iodine is present as iodide ion, wherein each of said Fe, Cu, Co, Mn and Zn is present as a salt or an oxide of the metal, wherein said mixture (*a*) comprises 90 to 98 percent by weight of the preservative and said mixture (*b*) comprises 1.0 to 5.0 percent by weight of the preservative; wherein said preservative is capable of effecting an 8 percent increase in the amount of digestable protein contained in silages after storage.

3,968,260

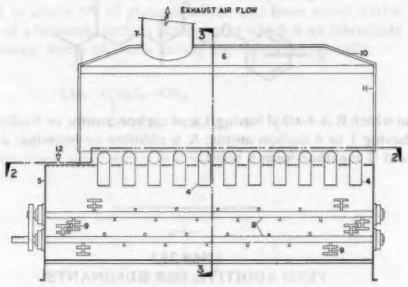
PRODUCT AND PROCESS FOR PRODUCING DEHYDRATED GRANULAR POTATO PRODUCT HAVING HIGH COLD WATER ADSORPTION

Mounir A. Shatila, and Robert M. Terrell, both of Blackfoot, Idaho, assignors to American Potato Company, Vacaville, Calif.

Continuation of Ser. No. 344,052, March 22, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,837
Int. Cl.² A23B 4/04
U.S. Cl. 426—96 **29 Claims**

1. A direct process for the production of dehydrated granular potato product having a high cold water adsorption essentially consistng of the following steps:

a. preparing potatoes for cooking;
b. cooking the prepared potatoes;
c. mixing uniformly with the cooked potatoes, a starch complexing emulsifier in the concentration of about 0.30–2.0% by weight of the total solid matter, to coat the surface of the cells of the cooked potatoes with the emulsifier and directly
d. granulating the mixture of step (c) by
1. mixing the mixture using sufficient mixing action to expose continually new surfaces for drying without rupturing the coated cells and by



2. reducing the moisture of the mixture to about 25 to 30% by injecting heated air below about 500°F on the surfaces of the mixture so that intact potato cells and agglomerates of intact cells are separated from the mixture, performing steps (c) and (d) before any significant conditioning of said mixture can take place;
e. airlifting the granulated cells and agglomerates by entrainment in the heated air,
f. separating the airlifted materials from entrainment in the heated air; and
g. drying the separated materials to a final moisture content of about 7–8% whereby the conversion of amylose to its insoluble retrograded form is prevented.

3,968,261

METHOD AND COMPOSITION FOR PREPARING A WHIPPED SALAD DRESSING

Louis P. Goodman, Lake Hiawatha, N.J., assignor to Kraftco Corporation, Glenview, Ill.

Filed July 9, 1975, Ser. No. 594,197
Int. Cl.² A23L 1/24
U.S. Cl. 426—98 **22 Claims**

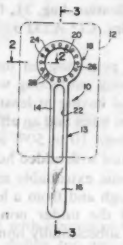
1. A dry, particulate, composition which when reconstituted and whipped is adapted for blending with pourable salad dressings to provide a whipped salad dressing said composition comprising a hard fat having an SFI in the range of from about 50 to 70 at 70°F and an I.V. in the range of from about 3 to 15, a liquid oil having an SFI in the range of from about 0 to 10 at 70°F and an I.V. in the range of from about 50 to 130, the ratio of said hard fat to said liquid oil being from about 1:1 to about 1:2 on a weight basis, monoester whipping agent, a proteinaceous film forming agent, and a hydrocolloid, said fat and said oil being encapsulated in said proteinaceous film forming agent.

3,968,262

COMBINED CONFECTION AND BUBBLE-FORMING DEVICE

Nicholas S. Hodska, Stratford, Conn., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Continuation-in-part of Ser. No. 473,348, May 28, 1974, abandoned. This application Apr. 11, 1975, Ser. No. 567,061
Int. Cl.² A23G 3/00, 9/00; A63H 33/28
U.S. Cl. 426—134 3 Claims



1. In combination with a body of edible material, a support comprising: a generally planar annular head within said body, said head being characterized by generally circular outside and inside diameters, said inside diameter defining a central opening through said head thereby permitting the support to serve as a bubble forming member for use with a soap solution once said body is consumed, an elongated stem extending radially from said head, said stem including a first portion lying outside of said body serving as a handle, an array of apertures through said head at angularly spaced apart positions intermediate said inside and outside diameters for storing said soap solution; and plural radially directed angularly spaced apart grooves in the surface of said head communicating between the apertures and the central opening for conveying said soap solution to said central opening, said body of edible material extending into said central opening and into said apertures for locking said body on said support.

3,968,263

BEVERAGE MIX AND METHOD

George H. Reussner, Pearl River, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 360,215, May 14, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,531
Int. Cl.² A23L 2/02
U.S. Cl. 426—250 10 Claims

1. A dry mix for forming a low pH beverage with water, wherein each quantity of mix for preparing one quart of beverage comprises: suitably effective amounts of flavoring and coloring, from 0.08 to 0.2 gram equivalents of a food acidulent, sufficient buffering material to achieve a final beverage pH of from 2.5 to 3.5, and from 1 to 6 grams of tricalcium phosphate.

6. In a method for preparing a low pH beverage which would have a normal tendency toward demineralizing tooth enamel, each quart of beverage containing suitably effective amounts of flavoring and coloring, from 0.08 to 0.2 gram equivalents of a food acidulent, and sufficient buffering material to achieve a final beverage pH of from 2.5 to 3.5, the improvement which comprises adding from 1 to 6 grams of tricalcium phosphate to each quart of beverage to thereby reduce the tendency of the beverage toward demineralizing tooth enamel.

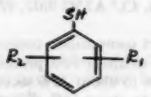
3,968,264

FLAVORING AGENT

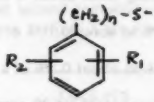
Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament; Max Stoll, both of Geneva, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,820
Int. Cl.² A23L 1/234
U.S. Cl. 426—535 38 Claims

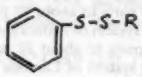
1. As a new composition of matter a soluble coffee material having added thereto a minor, but flavor-modifying amount of a compound selected from the group of compounds having the general formulae:



wherein R1 is hydrogen, hydroxyl methyl, ethyl, methoxy, or ethoxy and R2 is methyl or hydrogen; and



wherein R1 is hydrogen, hydroxyl methyl, ethyl, methoxy or ethoxy, R2 is methyl or hydrogen, R3 is methyl or benzyl and *n* is 0, 1 or 2; and



wherein R is methyl or phenyl.

3,968,265

FREEZE-THAW STABLE, FRENCH FRY POTATO PRODUCT AND PROCESS FOR PRODUCING THE SAME

Mounir A. Shatila, and Roderick G. Beck, both of Blackfoot, Idaho, assignors to American Potato Company, Vacaville, Calif.

Filed Feb. 1, 1973, Ser. No. 328,536
Int. Cl.² A23L 1/10
U.S. Cl. 426—550 24 Claims

1. The process of fabricating potato pieces suitable for freezing and which remain freeze-thaw stable prior to refrying, comprising the steps of:

a. preparing a cohesive dough of about 23–40% solids and 60–77% moisture content by mixing together the following ingredients,
   i. a source of intact cooked potato cells,
   ii. gum binder,
   iii. extracellular raw starch, and
   iv. water, the solids comprising by weight 85–95% of said source of intact cooked potato cells, 0.5–5% of said gum binder and 2–15% of said extracellular raw starch, the water being added at a temperature of 45°–200°F.,
b. forming the dough into French fry pieces
c. parfrying the pieces in fat at a temperature of about 300°–370°F., said parfrying step, gelatinizing said extra-

cellular raw starch, said parfrying taking place until the moisture content of the pieces is about 40–65% by weight

d. cooling down the parfried pieces such that said gelatinized extracellular raw starch forms a firm, gel starch matrix throughout the pieces, said gel matrix binding the water remaining in said pieces, and

e. freezing the parfried peices, said binding of the water by said gel matrix resulting in said pieces having structural rigidity after complete thawing thereof, even at room temperature, prior to refrying and serving.

3,968,266

LOW DENSITY FROZEN DESSERT

William Lewis Baugher, Logan Township, Dearborn County, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 24, 1975, Ser. No. 625,735
Int. Cl.² A23G *9/02, 9/04*
U.S. Cl. 426—566 6 Claims

1. A frozen dessert composition comprising:

a. from about 3% to about 10% protein solids;

b. from about 10% to about 25% saccharides;

c. from about 3% to about 15% of a triglyceride fat;

d. from about 0.1% to about 2% of a polyglycerol fatty acid ester emulsifier;

e. from about 0.1% to about 2% of a fatty acid ester of an aliphatic diol having from about 3 to about 5 carbon atoms;

f. from about 0.005% to about 0.10% of an anionic emulsifier;

g. from about 0.05% to about 0.5% of a stabilizing system comprising:

1. from about 5 parts to about 20 parts per 100 parts of the stabilizing system of citric acid or a salt thereof;

2. from about 15 parts to about 35 parts per 100 parts of said stabilizing system of tetrasodium pyrophosphate;

3. from about 25 parts to about 65 parts per 100 parts of the said stabilizing system of carboxymethylcellulose;

4. from about 10 parts to about 30 parts per 100 parts of said stabilizing system of hydroxypropyl cellulose; and

5. from about 5 parts to about 20 parts per 100 parts of said stabilizing system of Lambda Carrageenan gum;

h. from about 55% to about 65% water.

3,968,267

CONTINUOUS PROCESS FOR PREPARING A WHIPPED-CREAM TOPPING DESSERT

Katsuhiro Ogasa, Yokohama; Shigeo Okonogi; Hiroya Yuguchi, both of Tokyo; Yoshinobu Hayashi, Kamakura, and Yusuke Miyazaki, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed June 13, 1975, Ser. No. 586,804
Claims priority, application Japan, June 14, 1974, 49-67186
Int. Cl.² A23G *3/00*
U.S. Cl. 426—570 10 Claims

1. A process for preparing a whipped-cream topping dessert comprising the steps of:

a. formulating an aqueous mixture containing 10 to 30 percent by weight of fat, 3 to 6 percent by weight of milk protein, 12 to 22 percent by weight of saccharide, 0.3 to 0.8 percent by weight of emulsifier, 0.05 to 0.15 percent by weight of thickening agent and 0.3 to 0.6 percent by weight of gelling agent;

b. homogenizing said mixture;

c. pasteurizing and cooling the mixture to room temperature;

d. thereafter adding an aqueous solution of a calcium salt to said mixture so that the amount of calcium ion in said mixture is 10 to 35 mg. per 1 gram of the milk protein;

e. whipping and heating the resultant mixture at a temperature of 25° to 30°C to prepare a flowable whipped-cream;

f. topping said whipped-cream onto a lower layer dessert base maintained at a temperature of 50° to 70°C which has previously been placed into a container; and

g. solidifying both layers by cooling

3,968,268

PROCESS FOR PRODUCING HYDRATABLE, TRANSLUCENT TO GLASSY, PROTEINACEOUS PRODUCTS, AND THE RESULTING PRODUCTS

Louis Sair, and Donald W. Quass, both of Evergreen Park, Ill., assignors to The Griffith Laboratories, Inc., Alsip, Ill.

Continuation-in-part of Ser. No. 77,720, Oct. 2, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 285,422
Int. Cl.² A23J *3/00*
U.S. Cl. 426—580 22 Claims

1. The method of preparing an unpuffed, proteinaceous food product comprising subjecting water-moistened, edible proteinaceous material having at least about 40% by weight protein on a dry weight basis and an effective amount of water within the range of about 10 to 50% to working under effective mechanical pressure with added heat sufficient to convert it to a hot, moist, plastic extrudable mass and extruding said hot plastic mass through and from a length of a temperature controlled, elongated die under non-puffing conditions to provide an unpuffed, substantially homogeneous, translucent to glassy, extruded product characterized by having texture and retaining its structural integrity under retorting conditions.

3,968,269

PROTEIN FOOD PRODUCT AND METHOD OF MAKING

Bernard M. Payne, St. Charles; John R. Cloute; Edward A. Johnson, both of St. Louis, all of Mo.; Arthur V. Brown, Jr., Fultz, Ill., and Edward V. Oborsh, Ballwin, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 378,490, July 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 193,709, Oct. 29, 1971, abandoned. This application June 4, 1975, Ser. No. 583,361
Int. Cl.² A23J *3/00;* A23L *1/20, 1/31, 1/325*
U.S. Cl. 426—629 16 Claims

1. A method for the production of a porous food product having the texture and organoleptic properties of meat comprising;

a. forming a mixture consisting essentially of a vegetable protein containing material, and a meat source selected from the group consisting of raw meat and meat by-products in an amount of between about 5 to 80% by weight of said mixture; said mixture having a protein content on a dry basis of at least about 25% by weight;

b. mechanically working the mixture under elevated temperatures of at least about 212°F. and elevated pressures to convert the mixture to a flowable substance; and

c. forming an expanded, porous structure by extruding the mixture through a restricted orifice into an environment of substantially lower pressure.

3,968,270

PROCESS FOR PREPARATION OF METAL COATINGS

Takashi Hasegawa, 4-23-15, Nakabaru, Isogo, Yokohama, Japan

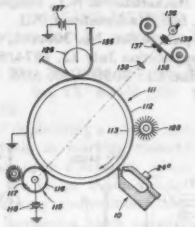
Filed Sept. 19, 1974, Ser. No. 507,490
Claims priority, application Japan, Nov. 6, 1973, 48-125084; Nov. 6, 1973, 48-125085
Int. Cl.² B05D *1/06*
U.S. Cl. 427—13 12 Claims

1. A process for the preparation of metal coatings which comprises positively charging a metal vapor in steam or an inert gas maintained at a low pressure and electrically depositing the metal in an electrodeposition atmosphere which is low pressure steam on the surface of a substrate which is negatively charged.

3,968,271
COATING APPARATUS AND USES THEREOF

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 209,611, Dec. 20, 1971, abandoned.
This application Feb. 22, 1974, Ser. No. 444,942
Int. Cl.² B05C 3/02
U.S. Cl. 427—15 2 Claims



1. A coating method with apparatus comprising upper and lower members which define top and bottom walls, respectively, of a coating material reservoir and a passage for passing coating material from the reservoir to a surface to be coated, each of said members at the end of said passage including a passage surface closely adjacent the surface to be coated, one of said passage surfaces being closer to the surface to be coated than the other; means for introducing a coating material into the reservoir and through the end of said passage; two sidewalls, the inside surfaces of which contact said passage surfaces to define the end of said passage; each sidewall provided with a smooth bearing surface positioned in a plane parallel to the closer of said passage surfaces to the surface to be coated, said closer passage surface being set back from said bearing surfaces by a preselected distance which determines the desired coating thickness, the bearing surfaces adapted to be placed in contact with portions of the surface to be coated which are not to be coated comprising the steps of:

a. advancing a surface to be coated in a direction from the passage surface further from the surface to be coated toward the passage surface closest to the surface to be coated without contacting the surface to be coated with either of said first and second passage surfaces, while continuously contacting said smooth bearing surfaces to portions of the surface to be coated which are not to be coated;

b. building a bead of coating material in the space defined by the surface to be coated, the inside of said member ending in the passage surface closer to the surface to be coated and said passage surface further from the surface to be coated; and

c. coating the coating material onto the surface to be coated between the closer of said passage surfaces from the bead of coating material built in the space defined by the surface to be coated, the inside of said member ending in the passage surface closer to the surface to be coated and said passage surface further from the surface to be coated, the passage surface closest to the surface to be coated functioning as a metering face for metering coating material onto the surface to be coated.

3,968,272
ZERO-BIAS SCHOTTKY BARRIER DETECTOR DIODES

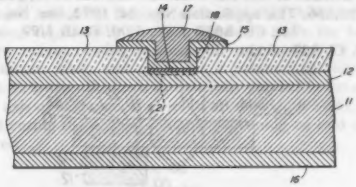
Yoginder Anand, Woburn, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed Jan. 25, 1974, Ser. No. 436,431
Int. Cl.² B05D 5/12
U.S. Cl. 427—84 10 Claims

1. A method of making a metal-silicide-silicon Schottky barrier diode having a barrier height about 0.15 volt, comprising the steps of:

providing a body of silicon having resistivity between about 0.1 ohm-cm and 0.3 ohm-cm to receive a metal capable of forming a silicide with said body;

maintaining said body at a first temperature not lower than approximately 100°C, and not higher than approximately 200°C;



depositing on said body while said body is at said first temperature a metal having a barrier height between about 0.3 volt and 0.4 volt;

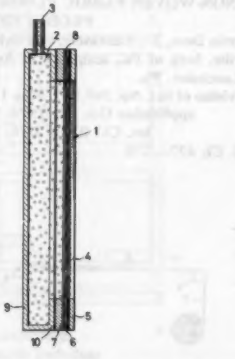
raising the temperature of said body with said metal thereon to a second temperature which is substantially less than the lowest eutectic temperature for the silicides of said metal; and

maintaining said second temperature for a time interval sufficiently long to form a silicide of said metal in said body.

3,968,273
METHOD OF MAKING ELECTRODE FOR PREPARING HYDROGEN PEROXIDE

Bertel Kastening, and Wolfgang Faul, both of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Oct. 23, 1974, Ser. No. 517,199
Claims priority, application Germany, Oct. 24, 1973, 2353259
Int. Cl.² C25B 1/30, 11/12
U.S. Cl. 427—122 18 Claims



1. A method of making an electrode for preparing hydrogen peroxide, which includes the steps of: glowing active carbon powder in a vacuum at a temperature above 900°C, cooling the thus treated active carbon powder in a vacuum, mixing the thus cooled active carbon powder with a solvent containing a binder and a hydrophobic additional substance, applying the thus obtained mixture onto an electrically conductive carrier structure, drying said mixture applied onto said carrier struc-

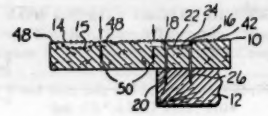
ture, and glowing said active carbon powder for a period of at least 30 minutes.

3,968,274

TEXTURAL PANEL

David Andrew Harris, Bedminster, N.J., and Bruce Edward Hart, Milton, Pa., assignors to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 142,705, May 12, 1971, Pat. No. 3,726,056. This application Nov. 24, 1972, Ser. No. 309,302
Int. Cl.² B05D 1/36, 5/00; E04B 1/99
U.S. Cl. 427—203 1 Claim



1. A process of forming a visible textural surface on a decorative acoustical panel having a fibrous body portion comprising:

a. coating an exterior surface of the body with a film of hardening liquid;

b. distributing individual granules of particulate material generally uniformly over a substantial portion of the coated exterior surface to provide a granular texture to said surface;

c. coating the granules with a film of hardening liquid adhering the granules to the exterior surface, said film being insufficient to eliminate said granular texture; and

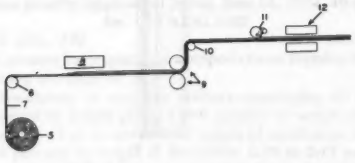
d. thereafter indenting part of the surface on which the liquid coated granules are located, said indentations extending from the exterior surface penetrating part way into the panel body to cause displacement of said part of said surface thereby forming portions of walls, said walls including some of said coated granules, said coated granules on said exterior surface and on said walls of said indentations comprising a part of said visible textural surface of said panel.

3,968,275

NON-WOVEN FABRIC FLOOR AND METHOD FOR PRODUCTION

Martin Dees, Jr., Lancaster, and Debra M. Karcheski, Millersville, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 360,837, May 16, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,537
Int. Cl.² B32B 3/26; B05D 3/02
U.S. Cl. 427—270 12 Claims



1. A method of forming a decorative thermoplastic vinyl composition surface covering having a non-woven, dimensionally stable scrim reinforced, needle-punched backing layer comprising:

a. Screen printing a backing, having a weight of about 8 ounces per square yard or greater, and bonded with from about 3 to 30% by weight latex, with plastisol inks to form a design on the face of the backing;

b. Pressing and gelling the decorative coating to form a continuous gelled decorative layer which is firmly embedded in the backing, the surface fibers of the backing being embedded within the gelled decorative layer;

c. Applying a thin, non-porous, plastisol clear coat; and

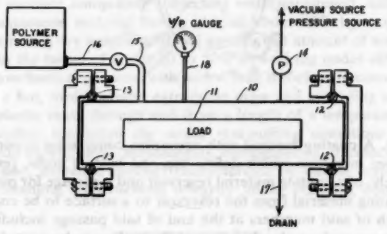
d. Heating to fuse the plastisol coatings.

3,968,276

PROCESS FOR THE PRESERVATION OF WOOD

William R. Allen, Hackettstown, N.J., assignor to Diversified Wood Products, Inc., Hackettstown, N.J.

Continuation-in-part of Ser. No. 300,496, Oct. 25, 1972, abandoned. This application July 12, 1974, Ser. No. 488,020
Int. Cl.² B05D 3/00, 1/18
U.S. Cl. 427—297 17 Claims



1. A process for the impregnation of wood with chemicals to the core of the heart wood of said wood which comprises,

enclosing the wood in a chamber

sealing said chamber,

evacuating said chamber slowly, over a period of 20–30 minutes, to a level below 10 inches of mercury,

admitting to said chamber sufficient liquid in the form of an aqueous solution of a resin prepolymer to immerse said wood,

maintaining vacuum over said immersed wood for a period up to about one hour, to accomplish removal of moisture and volatiles from said wood,

and to cause said solution to enter said wood, the end point of said condition being indicated by the cessation of any sound within the chamber,

admitting an additional amount of said solution to said chamber and developing pressure in said chamber to the point of refusal of the wood to receive or absorb further liquid,

removing liquid from said chamber,

removing impregnated wood from said chamber.

3,968,277

PROCESS FOR COATING SOLID PARTICLES WITH A DIGESTIVE TRACT-SOLUBLE FILM

Muneaki Takase, Tokyo, Japan, assignor to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1974, Ser. No. 444,056
Claims priority, application Japan, Feb. 27, 1973, 48-23479; Mar. 13, 1973, 48-29221; Mar. 13, 1973, 48-29222; Mar. 13, 1973, 48-29223
Int. Cl.² C08F 27/08
U.S. Cl. 427—212 11 Claims

1. A process for coating solid particles with a digestive tract-soluble film which comprises causing solid particles having a water content in the range of from 15 to 30% by weight of water to said particles to roll by a rotating disk rotating at a sufficient speed to provide a peripheral speed of from 200 to 450 meters per minute and applying a coating solution containing a digestive tract-soluble material selected from the group consisting of dialkylamino-ethyl methacrylate-alkylmethacrylate copolymers, alkylvinyl pyridine-methacry-

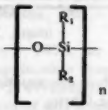
lic acid-alkyl acrylate copolymers, alkyl methacrylate-methacrylic acid copolymers, polyvinylacetal dialkylamino-acetate, and dicarboxylic acid halfester of cellulose acetate in a mixed solvent of at least two solvents selected from the group consisting of lower alcohols, lower ketones and lower halogenated hydrocarbons to said rolling particles and developing a digestive tract-soluble film on said particles while subjecting said particles to heated gas to evaporate said solvent therefrom.

3,968,278
IMAGING METHOD

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 28, 1974, Ser. No. 473,623
Int. Cl.² B41M *5/00*
U.S. Cl. 427—258 **8 Claims**

1. A method of duplicating a master comprised of a thermoplastic organic resin as marking material distributed in an imagewise manner upon a substrate which comprises:
   a. contacting the image bearing substrate with a highly viscoelastic inking composition comprised of:
      1. a silicon containing block copolymer having siloxane segments and polymeric segments of a material which is adhesive to the marking material, said siloxane segments being characterized by the formula:

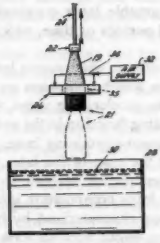


in which R_1 and R_2 are monovalent organic moieties which may be the same or different and n is a number representing the degree of polymerization;
      2. a coloring material; and
      3. a solvent in which the silicon containing block copolymer is soluble but which is a non-solvent for the organic marking material; and
   b. contacting under pressure the inked, image bearing substrate with a transfer member to thereby transfer ink from the image bearing substrate to the transfer member in an imagewise configuration corresponding to the image on the master.

3,968,279
METHOD FOR APPLYING PLASTISOL COATING OF UNIFORM THICKNESS TO GLASS CONTAINERS

William Brown, Amanda, and Francis J. Shonebarger, Lancaster, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 408,617, Oct. 23, 1973, Pat. No. 3,870,015. This application Sept. 19, 1974, Ser. No. 507,358
Int. Cl.² B05D *3/04*
U.S. Cl. 427—348 **4 Claims**



1. A method for coating a glass container with a sidewall coating of uniformly thick plastic material comprising the steps of:
   1. gripping said glass container by the finish portion thereof and dipping it into a bath containing a curable liquid coating material;
   2. forming an air knife in the shape of a downwardly angulated thin conical sheet of air flowing toward an apex;
   3. withdrawing said container from said bath with excess coating material adhering to it,
   4. passing said container with the adherent coating material thereon upwardly through said air knife along a path passing substantially through said apex while the knife strips excess coating material off the sidewall of said container, while said container is substantially upright with its longitudinal axis substantially parallel to the central axis of said conical sheet of air of said air knife,
   5. and curing the coating material remaining on said container.

3,968,280
POLYOLEFINS/POLYCARBONAMIDE POWDER COMPOSITIONS SUITABLE FOR THE PRODUCTION OF CONTINUOUS COATING ON SUBSTRATES SUCH AS GLASS OR METAL

Wassily Poppe, Lombard, and Ivor R. Fielding, Naperville, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

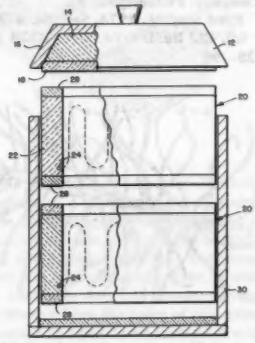
Filed June 28, 1974, Ser. No. 483,923
Int. Cl.² B32B *15/08, 17/10*
U.S. Cl. 428—35 **8 Claims**

1. A substrate bearing a layer comprising a compatible blend of from about 25 to 90 parts by weight polyolefin and from about 75 to 10 parts by weight of polycarbonamide of a dicarboxylic acid having at least 18 carbon atoms.

3,968,281
FILTER MOLDED HEATING AND/OR INSULATING MEMBER

Ronald E. Erickson, Oconomowoc, Wis., assignor to Sybron Corporation, Rochester, N.Y.

Filed July 15, 1974, Ser. No. 488,262
Int. Cl.² B32B *1/04, 3/02*
U.S. Cl. 428—75 **8 Claims**



1. A insulating body comprising:
   a. a pair of members, each including
      i. a first layer of an integrated mass of inorganic refractory fibers filter molded from a liquid suspension of said refractory fibers and colloidal silica, and
      ii. a second layer of ceramic fiber blanket material bonded to a surface of said first layer after the filter molding and before the drying thereof, the bonding being accomplished by colloidal silica present at the interface between said first layer and said second layer; and

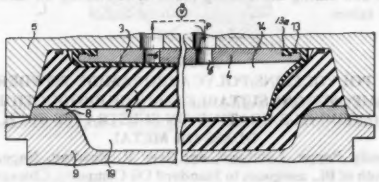
b. said members resting one against the other with said layer of ceramic fiber blanket material on each member being in abutting relationship so as to form a heat sealing resilient gasket between said members.

3,968,282

PRESSURE PAD OF RUBBER OR RUBBER-LIKE MATERIALS FOR PRESSES

Horst Engel, Sarstedt, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Dec. 16, 1974, Ser. No. 533,240
Claims priority, application Germany, Dec. 18, 1973, 2362903
Int. Cl.² B32B 3/00; B30B 5/02
U.S. Cl. 428—156 3 Claims



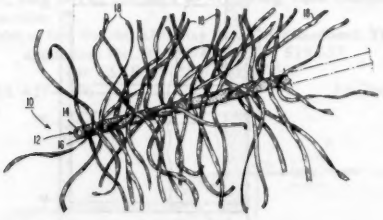
1. An elastic pressure pad of elastomeric material having in combination a marginal curved section with a radially inwardly directed annular connecting flange for sealing engagement with a rim portion of a rigid holding member for a press, said marginal curved section being provided with circular recess means having a relatively shallow depth so as not materially to weaken the wall thickness of said curved section, said recess means forming a fillet, said recess means being arranged within the region and in the direction of the medium radius of said curved section.

3,968,283

FLOCKED FILAMENTARY ELEMENT AND STRUCTURES MADE THEREFROM

Richard W. Schutte, Newtown Square, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed May 21, 1974, Ser. No. 472,072
Int. Cl.² B05D 1/14, 1/16; B32B 33/00
U.S. Cl. 428—90 18 Claims



1. A flocked filamentary element suitable for use in the manufacture of textile substitutes such as webs, yarns, and the like, said filamentary element including:

A. a core-strand of at least one polymeric filament, said core-strand having a denier no greater than about 40;

B. an adhesive layer on said core-strand; and

C. substantially individualized cellulosic fibers adhered by said adhesive layer to said core-strand, said individualized cellulosic fibers being of a papermaking length less than about 6.35 millimeters and no less than about 1 millimeter, said cellulosic fibers constituting over 50% by weight of the filamentary element.

16. A textile substitute including a plurality of flocked filamentary elements each filamentary element including a core-strand of at least one polymeric filament, said core-strand having a denier no greater than about 40, and substantially individualized cellulosic fibers adhered by an adhesive layer to said core-strand, said individualized cellulosic fibers being of a papermaking length of less than about 6.35 millimeters and no less than about 1 millimeter, said cellulosic fibers being present in a sufficient concentration such that over 50% of the crossings between the flocked filamentary elements comprise spaced junctions, said flocked filamentary elements being adhered to each other at the crossing by means of their respective adhesive layers.

3,968,284

BREATHABLE FLAME RESISTANT FABRIC CONSTRUCTION AND METHOD OF MAKING SAME

Stephen George, 247 Swinton Ave., Bronx, N.Y. 10465

Filed July 1, 1974, Ser. No. 484,562
Int. Cl.² B05D 1/14, 1/16, 1/36
U.S. Cl. 428—90 11 Claims

1. A flame resistant fabric construction comprising:

a porous fiberglass base fabric;

a polymeric heat responsive adhesive coating on said base fabric, said adhesive coating not extending through the interstices of the base fabric, said adhesive coating releasing flame quenching gases when said adhesive is subject to flame;

and flock fibers embedded in said adhesive coating with one end of the fibers upstanding from said adhesive coating;

said adhesive coating containing a greater concentration of plasticizer adjacent the fiberglass fabric than the portion of the adhesive in the area of the flock with a resultant gradually increasing gradient of hardness in the adhesive coating as measured in moving away from the base fabric.

3,968,285

ONE-PART FOAMABLE LATEX COMPOSITION

Perley A. Coffin, Gloucester; Philip G. Cook, Newton, and Paul D. Demerjian, Andover, all of Mass., assignors to General Latex and Chemical Corporation, Cambridge, Mass.

Continuation of Ser. No. 257,398, May 26, 1972, which is a continuation-in-part of Ser. No. 124,514, March 15, 1971.
This application Feb. 4, 1974, Ser. No. 439,602
The portion of the term of this patent subsequent to July 13, 1993, has been disclaimed.
Int. Cl.² B32B 5/28; C08J 9/30; C08L 7/02, 9/10
U.S. Cl. 428—95 25 Claims

1. A one-part foamable latex composition which may be stored for extended periods of time, which latex composition comprises:

a. a natural or synthetic elastomeric latex subject to cure;

b. a curing system which comprises an ammonia-retardent dithiocarbamate accelerating agent, which agent is inhibited in accelerating function in the presence of the base;

c. a volatile nitrogen-containing base in an amount sufficient to inhibit the cure of the latex;

d. a foaming agent in an amount to permit mechanical frothing of the latex composition into a foam; and

e. the composition characterized by having a total solids content of from about 65% to 85% by weight, and the composition being free of a gelling agent capable of gelling the composition in storage, and free of a heat-sensitizing agent.

12. In a process for producing a foamable latex composition, which latex composition comprises:

a. a natural or synthetic elastomeric latex subject to cure;

b. a curing system; and

c. a volatile base in an amount sufficient to inhibit the cure of the latex, the base capable of being removed by heating, the composition being free of a gelling agent, the improvement which comprises:

incorporating an ammonia-retardant di thio carbamate accelerating agent into the latex, which agent is inhibited in an accelerating function in the presence of the volatile base, and a foaming agent in an amount to permit mechanical frothing of the latex composition into a foam, and the composition characterized by a total solids content of from about 65% to 85% by weight, and free of a heat-sensitizing agent, thereby providing a one-part foamable latex composition which may be stored for extended periods of time prior to use.

21. The process of claim 20 which includes applying the froth to the back of a tufted rug prior to heating and curing the froth.

3,968,286

STRUCTURAL TIMBER

Naomitsu Megumi, Funabashi, Japan, assignor to Tokyo Plywood Kabushiki Kaisha, Tokyo and Naomitsu Megumi, Funabashi, both of, Japan

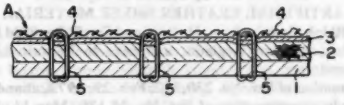
Filed Oct. 9, 1973, Ser. No. 404,163

Claims priority, application Japan, Oct. 25, 1972, 47-106851; Oct. 25, 1972, 47-106852

The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.

Int. Cl.[2] B32B *7/08*

U.S. Cl. 428—99 **7 Claims**



1. A structural timber for use in building construction comprising means defining a wood base material means, a felt-like material disposed on said base material means, said felt-like material consisting of a mass of inorganic fibers having air spaces therebetween, a dampproof sheet-like material disposed on said felt-like material, a metal net-like material disposed on said dampproof sheet-like material, and a plurality of spaced staples holding said materials together, said staples passing entirely through said metal net-like material, said dampproof sheet-like material, said felt-like material, and said wood base material means, said staples each having a U-shaped configuration including two leg portions joined to a connecting portion and turned-in end sections on the ends of said leg portions, said turned-in end sections being disposed on the outer surface of said wood base material means to prevent withdrawal of said staples, said connection portion of said U-shaped staples engaging said metal net-like material along spaced locations of the latter, said staples defining a substantially fixed space between said metal net-like material where the latter is engaged by said staples and said wood base material means, said dampproof sheet-like material and said felt-like material being confined within said substantially fixed spaces such that the air spaces are maintained in said felt-like material, thereby maintaining the sound and heat insulation properties thereof.

3,968,287

BONDED SLIT FOILS

Hermann Balk, Kriegsdorf, Germany, assignor to Reifenhauser KG, Troisdorf, Germany

Filed Aug. 12, 1974, Ser. No. 496,742

Claims priority, application Germany, Aug. 10, 1973, 2340545

Int. Cl.[2] B32B *3/10, 7/14, 27/06, 31/12*

U.S. Cl. 428—136 **1 Claim**

1. A composite foil having a hand and texture approximating that of a fabric and consisting of a laminate of at least two co-extensive synthetic resin foil sheets bonded together under heat and pressure over substantially their entire areas in contact with one another, each of said sheets being provided with a surface array equal length slits in respective parallel rows wherein the slits are spaced apart by a distance substantially less than the slit length, the rows of alternate sheets being mutually transverse and of a width equal to the slit length, the slits of each row being staggered with respect to the slits in neighboring rows such that, except for first and last slits in a row and the slits in first and last rows, each slit of a row of any sheet begins level with the ends of but between two adjacent slits of the next row and ends level with the beginnings of but between two adjacent slits of the opposed next row, said sheets being uniaxially oriented by stretching in the direction of the respective rows whereby the stretch directions of said sheets are mutually transverse.

3,968,288

METHOD OF PRODUCING EMBOSSED, TWO-COLORED SURFACE ON FIBROUS BOARD PRODUCT AND PRODUCT PRODUCED THEREBY

Robert F. Trexler, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 16, 1974, Ser. No. 515,324

Int. Cl.[2] B32B *3/30;* B05D *5/06*

U.S. Cl. 428—161 **10 Claims**

1. A method for producing an embossed, two-color appearance on the surface of a fibrous board substrate having a uniform thickness comprising the steps of coating the surface of the fibrous board substrate with an aquesus dispersion of a prime coating of a first color, applying a thermosetting resin base powder over the prime coated surface of said substrate while the prime coating is wet, said powder having a second color which is different from the color of said prime coating, embossing the coated and powdered surface of said substrate by pressing a heated embossing device into the coated and powdered surface of said substrate, said embossing device having high and low areas which produce low and high areas respectively on said surface of said substrate and being heated to a temperature such that said prime coating dries and said powder melts, sets, and becomes concentrated on the high areas of said surface of said substrate leaving only the prime coating remaining in the low areas of said surface of said substrate, and then removing said embossing device from said surface of said substrate whereby said embossed surface has a two-color appearance with the low areas having the first color and the high areas having the second color.

3,968,289

POLY(ARYLENE SULFIDE) COATING COMPOSITIONS CONTAINING POLYOXYETHYLATED VEGETABLE OIL

David E. Higbee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 22, 1974, Ser. No. 526,255
Int. Cl.² C08F 28/04
U.S. Cl. 428—195 20 Claims

1. A composition comprising at least one poly(arylene sulfide) resin and at least one polyoxyethylated vegetable oil.

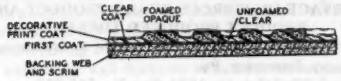
10. A process of coating a substrate which comprises applying to a surface of said substrate a layer of the dispersion of claim 9, and then heating the thus applied layer in the presence of oxygen to a suitable temperature for a sufficient time to fuse and cure said poly(arylene sulfide) resin.

3,968,290

NON-WOVEN FABRIC FLOOR

Martin Dees, Jr., Lancaster, and Debra M. Karcheski, Millersville, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation of Ser. No. 360,837, May 16, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,358
Int. Cl.² B32B 3/00
U.S. Cl. 428—196 2 Claims



1. A decorative surface covering comprising:

a. a non-woven needle-punched backing reinforced with a dimensionally stable scrim, said backing having a weight of about 8 ounces per square yard or greater, and bonded with from about 3 to 30 percent by weight latex;

b. a continuous screen-printed fused plastisol decorative layer bonded to the backing; and

c. a fused plastisol clear coat overlying and bonded to the decorative layer.

3,968,291

DECORATIVE CONSOLIDATED LAMINATES AND A PROCESS FOR THEIR PREPARATION

Marcel Chevallier, Quillan, France, assignor to Formica International Limited, London, England

Filed Jan. 9, 1974, Ser. No. 431,912
Claims priority, application France, Mar. 2, 1973, 73.07530
Int. Cl.² B32B 5/16, 3/00
U.S. Cl. 428—203 7 Claims

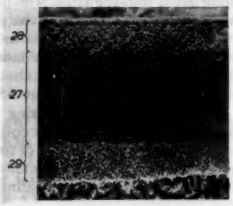
1. In a decorative consolidated laminate consisting of a rigidity imparting core layer, a decorative paper sheet impregnated with a noble thermoset resin supported on the core layer, and a wear surface layer on the decorative sheet, the decorative paper sheet being clearly visible through the wear surface layer, the improvement wherein the wear surface layer comprises a thermoset noble resin selected from the group consisting of melamine-formaldehyde, urea-formaldehyde and melamine-urea-formaldehyde thermoset resins, particles of barium sulphate substantially all of which have particle sizes less than 10 microns and, optionally, up to 20 parts by weight per 100 parts of resin solids of a finely divided colourless abrasion-resistant material which is silica or α-alumina having a maximum particle size not greater than 50 microns.

3,968,292

WATER VAPOR PERMEABLE SHEET MATERIAL

Arthur William Pearman, and Steven James Wright, both of King's Lynn, England, assignors to Porvair Limited, King's Lynn, England

Filed July 22, 1974, Ser. No. 490,402
Int. Cl.² D06N 7/04; B32B 3/00, 7/02
U.S. Cl. 428—213 13 Claims



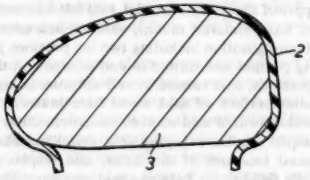
1. A water vapour permeable soft flexible sheet material suitable for use as the upper of a shoe in place of leather, said sheet material being at least 0.8 mm. thick and up to 2.0 mm thick, being free from fibrous reinforcement, and having an elongation at break in excess of 200%, comprising a strength imparting porous elastomeric polymer substrate layer disposed between a porous elastomeric polymer fleshcoat layer and a porous elastomeric polymer topcoat layer, the substrate layer having a higher density than the fleshcoat or topcoat layers and being thicker than either the fleshcoat or the topcoat layers the thickness of each of said fleshcoat and topcoat layers being 10 to 95% of the thickness of said substrate layer and the combined thickness of the fleshcoat and topcoat layers being in the range 30% to 175% of the thickness of the substrate layer.

3,968,293

ARTIFICIAL LEATHER SHEET MATERIAL

Victor Ralph Cunningham, Hutton, and David Leonard Boutle, Maldon, both of England, assignors to Porvair Limited, England

Continuation of Ser. No. 230,322, Feb. 29, 1972, abandoned, which is a continuation of Ser. No. 36,128, May 11, 1970, abandoned, which is a division of Ser. No. 819,656, April 28, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 620,793, March 6, 1967, abandoned, and Ser. No. 697,154, Jan. 11, 1968, Pat. No. 3,729,538. This application Oct. 11, 1973, Ser. No. 405,318
Claims priority, application United Kingdom, Mar. 7, 1966, 9974/66; Jan. 11, 1967, 1608/67; Jan. 11, 1967, 1609/67
The portion of the term of this patent subsequent to Apr. 24, 1990, has been disclaimed.
Int. Cl.² B29D 27/04; D06M 7/04; B32B 3/00
U.S. Cl. 428—213 8 Claims



1. In a water vapour permeable artificial leather sheet material which consists essentially of a strength giving base layer forming the major part of the thickness of the material and a microporous non-cellular surface layer of elastomeric poly-

urethane on said base layer, the improvement wherein said strength-giving base layer consists essentially of microporous water-vapour permeable elastomeric polyurethane, said microporous surface layer having a thickness of more than 0.005 inch and less than 0.05 and being more open and less dense, less tough, and more permeable to water vapour than said base layer, said layers being free of fibrous reinforcement and thereby having the elastomeric characteristics of said elastomeric polyurethane on stretching, and said material being resistant to formation of 'orange-peel' surface effects when stretched, said strength-giving base layer free from fibrous reinforcement being produced by a method which comprises forming on a support a continuous layer of a solution of elastomeric polyurethane working material in a solvent therefor, coagulating said layer, having said composition, by means of coagulating liquid, removing substantially all the solvent of said layer by washing with coagulating liquid, the coagulating liquid being a non-solvent for said elastomeric working material and being at least partially miscible with the solvent for the elastomeric working material, and drying the resulting water vapor permeable flexible sheet material, said method including the step of stripping the coagulated layer from the support.

3,968,294

LIGNOCELLULOSIC PARTICLE BOARD CURED WITH ALKALI- AND ACID-CATALYZED PHENOL ALDEHYDE THERMOSETTING RESINS

Paul Robitschek, and Ross L. Christensen, both of Eugene, Oreg., assignors to Chembond Corporation, Springfield, Oreg.

Filed Apr. 3, 1974, Ser. No. 457,438
Int. Cl.² B32B *7/02, 21/08*
U.S. Cl. 428—213 **6 Claims**

1. For use in the manufacture of hot pressed lignocellulosic particle board, a consolidatable laminar mat comprising:

a. a middle lamina comprising lignocellulose particles coated with from 3 to 15% by weight, dry solids basis, of a fast setting, acid catalyzed phenol aldehyde thermosetting resin having a pH of less than 2, and

b. surface laminae comprising lignocellulose particles coated with from 3 to 15% by weight, dry solids basis, of an alkali catalyzed phenol aldehyde thermosetting resin and having a pH of 7 to 13,

c. each surface lamina having a thickness of at least 0.025 inch.

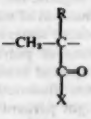
3,968,295

PREPARATION OF RUBBERIZED CORD FABRIC

Thomas S. Solomon, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 22, 1972, Ser. No. 228,143
Int. Cl.² B32B *3/02*; **D04D** *5/00, 7/08*
U.S. Cl. 428—250 **25 Claims**

21. A rubberized fabric, consisting of textile material, which is coated with a thin film of a composition containing an adhesive diene polymer and an acrylic copolymer having most of the links in the polymer chain of the configuration



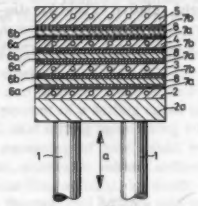
in which R is H, methyl, ethyl, Cl or CN, and in which X in a majority of the links is O-alkyl where the alkyl group has from 1 to 4 carbon atoms and X in a minority of the groups is OH, and the coated fabric is embedded in rubber.

3,968,296

PRESSURE COMPENSATOR FOR HEATING PLATEN PRESSES

Herbert Nopper, and Wolfgang Knoch, both of Krefeld, Germany, assignors to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany

Filed Apr. 18, 1974, Ser. No. 462,083
Claims priority, application Germany, Apr. 18, 1974, 2319593
Int. Cl.² B32B *31/20*
U.S. Cl. 428—256 **6 Claims**



1. A resilient, thermally-conductive pressure compensator for use in heating-plate presses of the type used to manufacture coated wood material panels or boards, comprising a composite sheet consisting of a woven mesh of metal wires embedded in a matrix of heat-conducting elastomeric filler material consisting of silicone rubber, said elastomeris material completely surrounding the metal wires and filling the interstices between them, and the elastomeric material being bonded to the metal wires, and having plane surfaces on opposite sides of the sheet substantially flush with the outer surfaces of the wire mesh.

3,968,297

POLYTETRAFLUOROETHYLENE COATINGS FOR GLASS FABRICS

David Allen Sauer, Dayton, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 253,338, May 15, 1972, Pat. No. 3,838,082, which is a continuation-in-part of Ser. No. 146,837, May 25, 1971, abandoned. This application Aug. 7, 1974, Ser. No. 495,502
Int. Cl.² C03C *25/02*; **B32B** *17/10*
U.S. Cl. 428—268 **12 Claims**

1. A composite structure consisting essentially of a glass fabric and a coating thereon consisting essentially of a topcoat of film-forming unsintered polytetrafluoroethylene and a base coat of the condensation product of a polyhydrolyzable compound, which condensation product is a tetravalent titanium oxide polymer, a zirconium oxide polymer, or a tin oxide polymer.

9. A process for increasing the flex life of glass fabric, comprising coating said fabric with an aqueous dispersion consisting essentially of water, film-forming unsintered polytetrafluoroethylene, and a polyhydrolyzable compound which is a compound of tetravalent organic titanium, tetravalent organic

zirconium, or tetravalent organic tin, and heating the coating to dry it and cause condensation of said compound, said heating being insufficient to cause sintering of said polytetrafluoroethylene, the proportions of polytetrafluoroethylene and said polyhydrolyzable compound in said dispersion being such that the amount of polytetrafluoroethylene in the coating is between 50 and 99.5 weight percent of the coating with the remainder being the polyhydrolyzable compound.

3,968,298

PROCESS FOR IMPARTING TO NATURAL KERATIN-CONTAINING MATERIAL A PERMANENT FINISH RENDERING THE MATERIAL RESISTANT TO DAMAGE BY INSECTS

Gerhard Reinert, Allschwil, and Alois Kleemann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

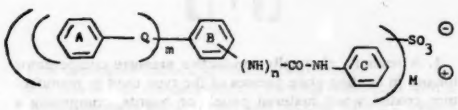
Filed Aug. 4, 1972, Ser. No. 278,081

Claims priority, application Switzerland, Aug. 19, 1971, 12143/71

Int. Cl.² A61L *13/00*; D06M *13/40*

U.S. Cl. 428—270 **14 Claims**

1. A process for imparting a permanent insect proof finish to natural keratin-containing material, comprising the step of applying to the keratin-containing material a solution of 0.1 to 5 per cent by weight, relative to said keratin-containing material, of at least one salt of a stomach poison insecticide, said salt consisting of a compound of the formula:



wherein ring A is substituted by one or two chlorine or bromine atoms, or by a chlorine atom and a methyl group,

ring B is substituted by a chlorine or bromine atom and/or by a trifluormethyl group,

ring C is substituted by one to three chlorine or bromine atoms, or by one to two trifluoromethyl groups, or by a chlorine atom and a trifluoromethyl group, or by a chlorine atom and a p-chlorophenoxy group,

Q is a direct bond or an oxygen or a sulfur bridge,

m and *n* each independently represent 0 or 1, and

M^+ is an inorganic or organic cation, in a mixed solvent consisting essentially of

a. 80 to 99% by weight of trichloroethylene, 1,1,1-trichloroethane, tetrachloroethylene or trifluorotrichloroethane, and

b. 20 to 1% by weight of methanol, ethyleneglycol monomethyl ether, or dimethylformamide.

3,968,299

TWO-WAY, SELECTIVE DIRECTIONAL, IMAGE-TRANSFER SHEET

John D. Angleman, 46 E. Main St., Brookside, N.J. 07926

Filed Feb. 21, 1975, Ser. No. 551,922

Int. Cl.² B32B *5/16*; B41L *1/20*

U.S. Cl. 428—307 **5 Claims**

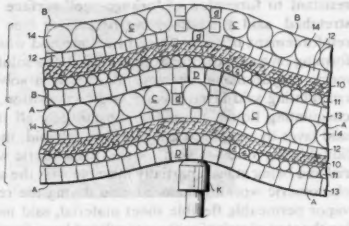
1. An image forming and transferring sheet comprising

a base sheet having

a first face and

a second face, each of said faces having

image transfer means for transferring an image to an adjacent sheet, said image transfer means including



an image forming agent on each of said faces, and

means for securing said image forming agents on said sheet for release only in a preselected direction of pressure by an imaging instrument, said securing means including screening means normally occluding passage of said image forming agents until distention thereof into an outwardly convex shape by an imaging instrument.

3,968,300

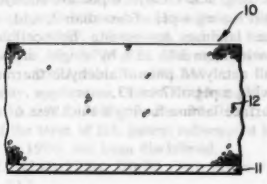
PHENOLIC POLYMER, RELATED PRODUCTS AND PROCESSES THEREOF

Ernest K. Moss, and John H. Beale, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Feb. 24, 1975, Ser. No. 552,379

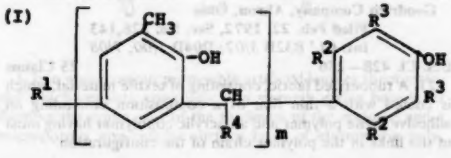
Int. Cl.² B32B *3/26*

U.S. Cl. 428—310 **17 Claims**



1. A cellular material comprising the reaction product of:

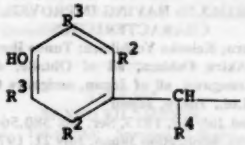
A. an alkylol group containing phenolic polymer of Formula I:



wherein:

a. R^1 is

hydrogen or a radical of Formula II:



b. the R_2's are independently selected from the group consisting of lower alkyl, phenyl, benzyl, halo, nitro and hydrogen,

c. the R^3's are independently selected from the group consisting of

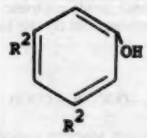
hydrogen, or a radical of Formula II,

d. the R^4's are independently selected from the group consisting of lower alkyl, hydrogen, phenyl, benzyl, or furyl,

e. *m* is an integer from 2 to 10 inclusive,

f. the phenolic polymer has a molecular weight between 200 and 2000, and

B. a compound of Formula V:



wherein the weight ratio of B:A is 1:30 to 1:2.

C. trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoro-ethane in a molar ratio of 1:20 to 20:1.

17. A laminated structural panel having at least one facing sheet and having the cellular material of claim 1 adhering thereto.

3,968,301

PRESSURE-SENSITIVE RECORD MATERIAL AND DYE SOLVENTS THEREFOR

James Kern Sears, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 225,658, Feb. 11, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,309

Int. Cl.² B32B *5/16;* **B05D** *5/00*

U.S. Cl. 428—323 **15 Claims**

1. A pressure-sensitive recording system comprising

a. supporting paper sheet,

b. mark forming components arranged in contiguous juxtaposition and supported by said paper sheet, said components comprising a chromogenic material and an electron accepting material of the Lewis acid type reactive with said chromogenic material to produce a mark when brought into reactive contact, and

c. a pressure releasable liquid solvent for said chromogenic mark forming component, said solvent comprising partially hydrogenated terphenyls having from about 65 percent to about 85 percent aromaticity.

10. A method of marking on a paper substrate by developing a color from colorless or substantially colorless chromogenic compounds which comprises contacting said chromogenic compounds and an electron accepting material of the Lewis acid type in the presence of a liquid solvent comprising partially hydrogenated terphenyls having from about 65 percent to about 85 percent aromaticity.

3,968,302

MOLD RELEASE COMPOSITION CONTAINING TUNGSTEN DISULFIDE

Richard E. Brown, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Division of Ser. No. 444,434, Feb. 21, 1974, Pat. No. 3,915,870. This application May 30, 1975, Ser. No. 582,311

Int. Cl.² B32B *5/16;* **C10M** *1/10;* **C03B** *39/00*

U.S. Cl. 428—328 **5 Claims**

1. A method of forming a lubricating and release coating on surfaces of molds and related parts, comprising applying an aqueous dispersion of a mixture of about 30 to about 70 weight percent tungsten disulfide having a lamellar-hexagonal crystalline structure, said tungsten disulfide having an average particle size of less than 2 microns, from about 15 to about 25 weight percent of a silicate selected from the group consisting of sodium silicate, potassium silicate, lithium silicate, guanidine silicate, tetramethylammonium silicate, tetraethanolammonium silicate, and mixtures thereof, and from about 1 to about 10 weight percent of a setting agent to the surface and part to be coated, said setting agent being a member selected from the group consisting of zinc oxide, calcium chloride, magnesium sulfate, aluminum sulfate, sodium borate, sodium metaborate, sodium fluorosilicate, kaolinitic clays and minerals, and mixtures thereof, and heating said molds and related parts to affix the silicate to the surface to form a thin coating thereon.

3,968,303

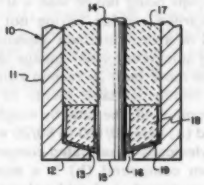
ELECTRICAL DISCHARGE DEVICE COMPRISING AN INSULATOR BODY HAVING AN ELECTRICALLY SEMI-CONDUCTING COATING FORMED THEREON

Robert C. Harris, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 480,199, June 17, 1974, Pat. No. 3,883,762. This application Dec. 9, 1974, Ser. No. 530,922

Int. Cl.² B32B *9/00;* **H01T** *13/02*

U.S. Cl. 428—332 **3 Claims**



1. A beryllium oxide ceramic insulator body having an electrically semi-conducting coating applied thereto, said coating having a thickness of from about 0.005 to 0.010 inches prior to firing the coated insulator body comprising a mixture of from 25% to 90% by weight of lanthanum oxide, from 5% to 75% by weight of cuprous oxide and from 0% to 25% by weight of ferric oxide, the coating being bonded to the insulator body by firing the coated insulator body at an ele-

vated temperature for a time sufficient to sinter at least one of said oxides.

3,968,304

POLYESTER BONDED TO RUBBER AND METHOD FOR MAKING THE SAME

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 370,129, June 14, 1973, Pat. No. 3,922,422. This application Jan. 6, 1975, Ser. No. 538,625
The portion of the term of this patent subsequent to Nov. 25, 1992, has been disclaimed.
Int. Cl.² B32B 27/36, 27/38, 27/42
U.S. Cl. 428—272 7 Claims

1. A polyester element useful in reinforcing a rubber compound, said element containing a total of from about 3 to 7% by weight (dry) based on the weight of said element of an adhesive composition consisting essentially of a first deposit of heat set polyallyl glycidyl ether having a number average molecular weight of from about 400 to 650 and an average of from about 2 to 6 epoxide groups and a second deposit of a heat set mixture of a major amount of a rubbery vinyl pyridine copolymer and a minor amount of a heat reactable resinous composition selected from the group consisting of:

1. a substantially heat-reactable 2,6-bis(2,4-dihydroxyphenylmethyl)-4-chlorophenol composition,
2. a mixture of a heat reactable resorcinolformaldehyde resole having hydroxyl and methylol groups and a substantially heat reactable 2,6-bis(2,4-dihydroxyphenylmethyl)-4-chlorophenol composition, and
3. a mixture of a water soluble or dispersible epoxide having from 2 to 6 epoxide groups and a molecular weight up to about 650 and an epoxide amine curing agent in an amount sufficient to cure said epoxide.

3,968,305

MAR-RESISTANT SYNTHETIC RESIN SHAPED ARTICLE

Akira Oshima; Keisuke Yoshihara; Mikio Shiki, and Tuneo Ikeda, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 212,047, Dec. 27, 1971, abandoned. This application Sept. 18, 1974, Ser. No. 507,000
Claims priority, application Japan, Feb. 13, 1974, 49-17364
Int. Cl.² B05D 3/06
U.S. Cl. 428—334 12 Claims

1. A synthetic resin shaped article having a mar-resistant polymer surface layer integrated with the polymer body, said polymer surface layer consisting essentially of, in polymerized form,

a. a compound having a total of at least three acryloxy (CH_2=CH.CO.O—) and/or methacryloxy (CH_2=C(CH_3)-.CO.O—) groups in the molecule, said acryloxy and methacryloxy groups being linked with a straight chain aliphatic hydrocarbon residue having not more than 20 carbon atoms or a straight chain aliphatic hydrocarbon residue having at least one ether linkage in the main chain and having not more than 20 carbon atoms and

b. at least one copolymerizable mono- or diethylenically unsaturated compound, the ratio by weight of compound (b)/compound (a) being 0/100 to 80/20 when compound (b) is a diethylenically unsaturated compound and 0/100 to 30/70 when compound (b) is a monoethylenically unsaturated compound, and said polymer surface layer having a mar-resistance to an extent such that no appreciable scratches are produced when a 25 mm diameter pad composed of No. 000 steel wool is rotated 100 revolutions at a rate of 40 R.P.M. while being pressed against the shaped article at a load of 1,000 g. and being prepared by completely polymerizing the monomer charge in an air-free atmosphere and in the presence of not greater than 5% by weight of an initiator, said initiator being at least one compound selected from the group consisting of azobisisobutyronitrile, benzoyl peroxide, lauryl peroxide, benzoin and benzoin alkyl ether having at most 4 carbon atoms in the alkyl group, and said polymer body being selected from the group consisting of polymethyl methacrylate, polycarbonate and a copolymer containing at least 70 % by weight of units derived from methyl methacrylate.

3,968,306

PLASTIC ARTICLES HAVING IMPROVED SURFACE CHARACTERISTICS

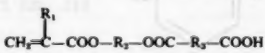
Toshio Yoshihara; Keisuke Yoshihara; Tuneo Ikeda; Yasuyuki Yamasaki; Akira Oshima, all of Ohtake, and Naoyuki Fukabori, Kanagawa, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed July 19, 1973, Ser. No. 380,560
Claims priority, application Japan, July 21, 1972, 47-72577
Int. Cl.² B32B 27/06, 27/36
U.S. Cl. 428—336 7 Claims

1. A plastic article having improved surface characteristics and comprising a plastic body having adhered thereon a crosslinked film of a composition consisting essentially of:

A. 10 to 90 parts by weight of a crosslinking unsaturated compound having a molecular weight of M and containing in the molecule N polymerizable ethylenically unsaturated radicals, N being an integer of at least 2, and selected from the group consisting of allyl acrylate, allyl methacrylate; methallyl acrylate; di- and tetra-esters of α,β-unsaturated carboxylic acids with polyhydric alcohols; addition products of glycidyl acrylate or methacrylate with polybasic carboxylic acids; addition products of an epoxy resin with acrylic acid, methacrylic acid and crotonic acid; polyethylene glycol dimethacrylate and polypropylene glycol dimethacrylate; the ratio of said molecular weight M to said number N of ethylenically unsaturated radicals, M/N, being about 49 to about 600;

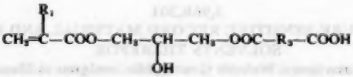
B. 90 to 10 parts by weight of an unsaturated monomer selected from the group consisting of acrylic acid; methacrylic acid; itaconic acid; crotonic acid; unsaturated carboxylic acids represented by the formula:



wherein R_1 is a hydrogen atom or a methyl group, R_2 is an alkylene group having 1 to 8 carbon atoms, and R_3 is an alkylene group having 1 to 8 carbon atoms, —CH=CH— or

;

unsaturated carboxylic acids represented by the formula:



wherein R_1 and R_2 are the same as defined above; styrenesulfonic acid; and monoallyl and monomethallylesters of dibasic carboxylic acids; and

C. up to 20 parts by weight of other copolymerizable unsaturated compound selected from the group consisting of monoesters of acrylic acid, methacrylic acid and crotonic acid with polyhydric alcohols; diacetone acrylamide; diacetone methacrylamide; N-methylol acrylamide and N-methylol methacrylamide; the total of (A), (B), and (C) being 100 parts by weight, at least a part of the acid radicals being converted into alkali salts thereof, said cross-linked film having a thickness of 5 to 500 μ and said

plastic body being composed of homopolymers or copolymers of monovinyl monomers selected from the group consisting of methyl methacrylate, ethyl methacrylate, butyl methacrylate, cyclohexyl methacrylate, lauryl methacrylate, methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, styrene, acrylonitrile, methacrylonitrile, vinyl chloride, and vinylidene chloride; copolymers of said monovinyl monomers with small amounts of crosslinking agents selected from the group consisting of ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, trimethylol propane triacrylate, and glycerine triacrylate; and unsaturated polyesters cured by crosslinking.

3,968,307

MIXED FILAMENTS

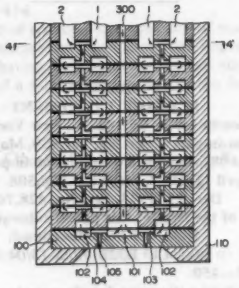
Masao Matsui, Takatsuki; Susumu Tokura, Osaka, and Masahiro Yamabe, Neyagawa, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Japan

Division of Ser. No. 200,423, Nov. 19, 1971, which is a continuation of Ser. No. 801,277, Feb. 24, 1969, abandoned. This application June 4, 1973, Ser. No. 366,516

Claims priority, application Japan, Oct. 8, 1968, 43-73319; Feb. 29, 1968, 43-13051; July 30, 1968, 43-53879; July 30, 1968, 43-53880

Int. Cl.² D01D *5/28*

U.S. Cl. 428—373 **8 Claims**



1. A multi-component filament formed by mixing and dispersing two different spinning materials having poor affinity and selected from the group consisting of nylon-6, nylon-66, polyethylene terephthalate, polyethylene oxybenzoate, polyolefin and polyalkylene oxide in a unitary filament

having a part of its cross-section constituted with a nebular configuration and a part with no nebular configuration, a surface of the filament being occupied with at least two components forming said nebular configuration which contains at least 100 cross-sectional structures having a variety of shapes and sizes, said nebular configuration continuing substantially along the longitudinal direction of the filament, and

said cross-sectional structures being dispersed irregularly in the other spinning material,

which is obtained by subjecting repeatedly said two spinning materials to a joining step in a narrow channel and a dividing step in a reservoir or to a joining step in a reservoir and a dividing step in a narrow channel in different phase at least eight times to be layer-multiplied.

3,968,308

PROCESS FOR THE MANUFACTURE OF CHIP BOARDS USING CONDENSATION RESINS AS BINDERS AND PRODUCT

Adolf Buschfeld, Alpen; Manfred Gramse, Rheinkamp-Repelen, and Dragomir Simic, Mulheim (Ruhr), all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Dec. 16, 1974, Ser. No. 533,386

Claims priority, application Germany, Dec. 22, 1973, 2364251

Int. Cl.² B29J *5/00*; D21J *1/18*

U.S. Cl. 428—402 **7 Claims**

1. In a process for the production of chip boards from wood chips using as the binding agent a condensation resin selected from the group consisting of phenol condensation products, urea condensation products, melamine condensation products, ketonic formaldehyde condensation products, and co-condensation products of said resins, wherein the said chips are wetted with water and then formed under heat and pressure into a chip board, the improvement comprising passing a spray of said binding agent in pulverulent form through a spray of atomized water before the spray or binding agent impinges onto said wood chips, and wherein said spray of atomized water contacts said spray of said binding agent at an angle of incidence of from about 40° to about 50°, and wherein after the spraying step, the center section chips of said chip board have a water content of from about 6 to about 9% by weight.

5. A chip board produced by the process of claim 1.

3,968,309

MOLDED ARTICLES OF PLASTICS HAVING IMPROVED SURFACE CHARACTERISTICS AND PROCESS FOR PRODUCING THE SAME

Makoto Matsuo, Chiba; Takao Suzuki, Tokyo; Keisuke Yoshihara; Tuneo Ikeda, both of Ohtake, and Kunio Chikanishi, Kawasaki, all of Japan, assignors to Dainippon Printing Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 526,727

Claims priority, application Japan, Nov. 26, 1973, 48-131756; Sept. 6, 1974, 49-101927

Int. Cl.² B32B *27/30*

U.S. Cl. 428—409 **14 Claims**

1. A molded article of plastic having improved surface characteristics which comprises a molded substrate of plastic and a cured film formed on the surface of the molded substrate, characterized in that the cured film is formed from a coating material comprising at least 30 % by weight of at least one polyfunctional compound selected from the group consisting of polymethacryloyloxy compounds having at least three methacryloyloxy groups in one molecule and a molecular weight of 250 to 800 and polyacryloyloxy compounds having at least three acryloyloxy groups in one molecule and a molecular weight of 250 to 800, and a fluorine-containing surfactant, in which the fluorine atom, is bonded to a carbon atom.

3,968,310

HALF-ESTER REACTION PRODUCTS OF MALEATED ALPHA-OLEFINS AND MONOHYDRIC ALCOHOLS

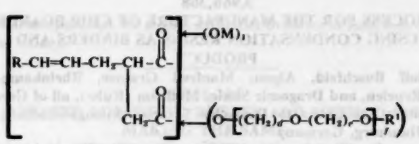
James K. Stowell, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Mar. 14, 1974, Ser. No. 451,662

Int. Cl.² B32B *9/04*

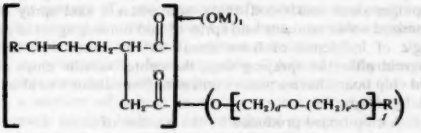
U.S. Cl. 428—411 **20 Claims**

1. A composition of the formula



wherein R and R^1 represent hydrocarbyl groups, *d* and *e* represent repeating alkylene units of 1 to 5 carbon atoms inclusive, *f* is an integer having an average value of about 2 to about 1,000 and M is a cation.

8. In a hot-melt adhesive composition containing a blend of thermoplastic substances which are suitably adapted to be converted to a molten mass by thermal treatment thereof and deposited upon a substrate and adhesively bound to a substrate upon cooling to a temperature below the melting point of the hot-melt adhesive composition, the improvement which comprises incorporating into the hot-melt adhesive composition at least 0.25% of the total hot-melt composition weight, a hot-melt additive represented by the structural formula:



(I)

wherein R and R^1 represent hydrocarbyl groups, d and e represent repeating alkylene units of 1 to 5 carbon atoms inclusive, *f* is an integer having an average value of about 2 to about 1,000 and M is a cation.

3,968,311

METAL COATED WITH COMPOSITIONS PREPARED FROM AQUEOUS DISPERSIONS OF CARBOXYLIC ACID RESIN AND AN ALIPHATIC AMINE

Ihab M. Hekal, Downers Grove, and Raymond G. Chelton, Chicago, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 395,820, Sept. 10, 1973, Pat. No. 3,904,569. This application Sept. 8, 1975, Ser. No. 611,365

Int. Cl.² B32B *15/08*

U.S. Cl. 428—461 **2 Claims**

1. A metal article coated with a coating composition comprised of a mixture of about 75 to 90% by weight of (1) a carboxylic acid containing olefin copolymer having reactive carboxyl groups prepared from about 60 to about 90 percent by weight of an α-olefin having the general formula $RCH{=}CH_2$ wherein R is selected from the group having 1 to 8 carbon atoms and about 10 to about 40 percent by weight of an α, β-ethylenically unsaturated carboxylic acid having 3 to 8 carbon atoms, and about 10 to 25 percent by weight of (2) an aliphatic polyamine selected from the group consisting of hexamethylene tetramine and amines of the general formula $NH_2(C_2H_4NH)_xC_2H_4NH_2$, *x* being an integer from 0 to 20.

3,968,312

COATING FIBROUS SUBSTRATES

Heinz Abel, Reinach; Melvin Harris, Dornach, both of Switzerland, and Derek James Rowland Massy, Linton, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1973, Ser. No. 392,920

Claims priority, application United Kingdom, Sept. 1, 1972, 40648/72

Int. Cl.² B32B *27/06, 9/02;* **B05D** *3/00*

U.S. Cl. 428—419 **15 Claims**

1. A process for providing leather with a wearing or decorative surface which consists of

1. coating 100 parts by weight of the leather on at least one face with 1 to 20 parts by weight of a curable composition comprising
   i. a[1] polymercaptan containing, per average molecule, at least two and at most six mercaptan groups and having an average molecular weight of at least 182 and at most 10,000
   ii. A polyene having an average molecular weight of at least 250 and at most 10,000, and containing, per average molecule, at least two ethylenic double bonds each α to a carbonyloxy group, the sum of the mercaptan groups in said polymercaptan and of such ethylenic double bonds in said polyene being more than 4 but at most 8, said polymercaptan being in a quantity sufficient to supply from 0.8 to 1.1 mercaptan groups per said ethylenic double bond of the polyene, and
2. curing the compositon on the leather.

15. Leather bearing thereon a wearing or decorative surface which is a cured compositon comprising

i. a polymercaptan containing, per average molecule, at least two and at most six mercaptan groups and having an average molecular weight of at least 182 and at most 10,000, and
ii. a polyene having an average molecular weight of at least 250 and at most 10000 and containing, per average molecule, at least two ethylenic double bonds each α to a carbonyloxy group, the sum of the mercaptan groups in said polymercaptan and of the ethylenic double bonds in said polyene being more than 4 but at most 8.

3,968,313

SURFACE TREATMENT

Martin B. Pearlman, 78-05 141 St., New York, N.Y. 11367

Continuation-in-part of Ser. No. 141,929, May 10, 1971, Pat. No. 3,796,608, which is a continuation-in-part of Ser. No. 630,187, April 12, 1967, Pat. No. 3,578,508. This application Dec. 27, 1973, Ser. No. 428,701

The portion of the term of this patent subsequent to Mar. 12, 1992, has been disclaimed.

Int. Cl.² B32B *9/06, 15/04*

U.S. Cl. 428—450 **10 Claims**

1. Process for treating metal surfaces to improve their resistance to chemical attack which comprises bringing said surfaces into contact with an aqueous composition consisting essentially of a colloidal disperison of silica and tannin and removing said metal surface from contact with said composition before any deposit of silica visible to the naked eye is formed on said surface.

3,968,314

BENZOYLPHENYLISOTHIOUREAS

Heinrich Kolling, Haan; Arno Widdig, Blecher; Herbert Thomas, and Hans Peter Schulz, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

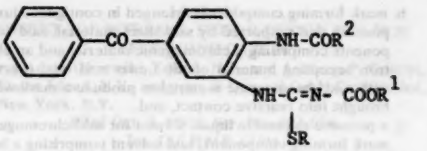
Filed Jan. 14, 1974, Ser. No. 433,084

Claims priority, application Germany, Jan. 23, 1973, 2303048

Int. Cl.² C07C *157/14*

U.S. Cl. 260—470 **20 Claims**

1. A benzoylphenylisothiourea of the formula:



wherein R is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, cycloalkyl of 5 to 6 carbon atoms or benzyl;

R^1 is alkyl of 1 to 4 carbon atoms, cyclohexyl or phenyl; and

R^2 is lower alkyl, cycloalkyl of 5 or 6 carbon atoms, phenyl, tolyl, phenoxymethyl, benzyl, mono-lower alkylamino, cyano lower alkylamino, lower alkoxy lower alkylamino, benzylamino or phenylamino.

3,968,315

QUATERNARY AMMONIUM ANTISTATIC AGENTS

Richard Hochreuter, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

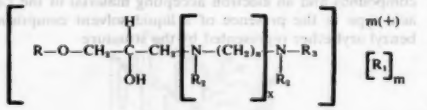
Filed Nov. 13, 1974, Ser. No. 523,264

Claims priority, application Switzerland, Nov. 20, 1973, 16334/73

Int. Cl.² B05D *3/02*

U.S. Cl. 428—474 **18 Claims**

1. A method of reducing the tendency of material to accumulate static electricity which comprises impregnating a porous material having such tendency with an aqueous solution or dispersion of a salt having a cation of the formula



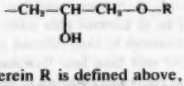
wherein

R is C_8–C_{14} alkyl, C_8–C_{14} alkenyl or mono- or di-C_4–C_9 alkyl phenyl,

each R_1 is bound to an amino centre, and is, independently, methyl, ethyl or benzyl,

each R_2 is, independently, methyl, ethyl, a group $-(CH_2CH_2O)_{q1}-H$ wherein q^1 is an integer 1 to 20, or a group $-(CHR_4-CHR_4-O)_{q2}-H$ wherein one R_4 is hydrogen and the other is methyl and q^2 is an integer 1 to 20,

R_3 has one of the significances of R_2 or is a group



wherein R is defined above,

m is an integer 1 to 4,

n is an integer 3 to 6 and,

x is an integer 2 or 3,

with the provisos that

i. at least one R_2 and R_3 is a group

$$-(CH_2CH_2O)_{q1}-H$$

or a group

$$-(CHR_4-CHR_4-O)_{q2}-H \text{ and}$$

ii. the sum of all the integers q^1 and q^2 in a molecule is an interger 3 to 20.

3,968,316

PROCESS FOR THE SURFACE TREATMENT OF UNSATURATED RUBBER

Yoshio Jyo; Yoshio Wada; Mitsuyoshi Aonuma, all of Yokohama; Takeo Kobayashi, and Kyouzi Inokuchi, both of Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Japan

Filed Oct. 1, 1973, Ser. No. 402,167

Int. Cl.² B32B *25/04, 25/12*

U.S. Cl. 428—492 **13 Claims**

1. A process for the surface treatment of a rubber or synthetic resin containing ethylenic unsaturation, comprising contacting said rubber, resin or mixture thereof with a treating agent consisting essentially of (A) an alkyl hypohalite selected from the group consisting of butyl hypohalites, amyl hypohalites and halogen-substituted methyl hypohalites and a compound (B) containing at least one active hydrogen and at least one functional group, said compound being selected from the group consisting of sulphuric acid, phosphoric acid, glycol, resorcin, 2-methyl-2,4-pentenediol, glycerine, malic acid, maleic acid, malonic acid, aldol, formamide, glycidol, thioglycolic acid and hydrochloric acid, the treating agent containing 0.1 – 10 moles of said compound B) per mole of the alkyl hypochlorite A.

3,968,317

WATER-DISPERSIBLE THERMOSETTABLE CATIONIC RESINS AND PAPER SIZED THEREWITH

David H. Dumas, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 393,689, Aug. 31, 1973. This application Sept. 8, 1975, Ser. No. 611,589

Int. Cl.² C08F *8/08*; **C08G** *18/04, 69/48*; **C08F** *126/04*

U.S. Cl. 428—537 **6 Claims**

1. Paper sized with the cured form of a water-insoluble, water-dispersible thermosettable cationic resin derived by reacting (I) an epihalohydrin and (II) a water-insoluble modified diallylamine polymer derived by reaction of (a) a diallylamine polymer consisting essentially of units of the formula

where R is hydrogen or C_1–C_4 alkyl and R′ is hydrogen, methyl, or ethyl and of the number of R's present in the polymer from 100% to 5% thereof are hydrogen and from 95% to 0% thereof are methyl or ethyl, and (b) a hydrophobizing compound selected from the group consisting of acyl halides, acid anhydrides, ketene dimers, and organic isocyanates, said hydrophobizing compound having a total of from about 12 to about 40 carbon atoms, the said modified diallylamine polymer having at least about 50% amine functionality, said reaction of (a) and (b) being carried out under a nitrogen blanket at a reaction temperature of from about 0° to about 100°C. and a pH of about 6 to 8, the amount of epihalohydrin employed being that amount sufficient to react with substantially all the amine functionalities of the water-insoluble modified diallylamine polymer.

3,968,318

DIMENSIONAL STABILIZATION OF LIGNOCELLULOSIC MATERIALS

Robert Warren Betty, Sarnia, Canada, assignor to Du Pont of Canada Limited, Montreal, Canada

Filed Feb. 25, 1974, Ser. No. 445,825
Claims priority, application Canada, Feb. 28, 1973, 164869
Int. Cl.² B32B *23/08*; B05D *3/02*
U.S. Cl. 428—511 5 Claims

1. Lignocellulosic material, of improved dimensional stability, said lignocellulosic material being dimensionally stabilized by impregnation with one or more polymerized ethylenically unsaturated monomers, at least one of which is vinyl pyrrolidone in an amount of at least 10 percent by volume.

3,968,319

PLASTIC PIGMENTS FOR PAPER COATINGS

Inder Mani, and Alexander Shand, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 10, 1974, Ser. No. 478,125
Int. Cl.² D21H *1/28*; C08F *33/08*
U.S. Cl. 428—511 13 Claims

1. A coated paper comprising a paper substrate having adhered thereto a coating composition comprising a binding amount of from about 1.3 to about 11.5 dry volume parts of a binder and an opacifying amount of 38.8 dry volume parts of a pigment, provided that at least a portion of said pigment is in the form of an amide pigment comprising a water-insoluble copolymer of an emulsion polymerizable, α,β-ethylenically unsaturated hard monomer and at least about 1 weight percent of an emulsion polymerizable, α,β-ethylenically unsaturated amide in the form of non-film forming discrete particles having an average particle diameter in the range from about 0.25 to about 1 micrometer with no more than 10 weight percent of said particles having diameters outside said range, said unsaturated amide being selected from the group consisting of acrylamide, methacrylamide, amides of fumaric acid, maleic acid, itaconic acid and citraconic acid, N-isopropylacrylamide, and N-(2-hydroxyethyl)acrylamide, said portion of amide pigment being sufficient to impart improved pick resistance as compared to a coating containing only inorganic pigment.

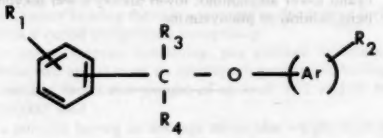
3,968,320

DYE SOLVENTS FOR PRESSURE-SENSITIVE RECORD MATERIAL

John F. Herber, St. Louis; James K. Sears, Webster Groves, both of Mo., and Quentin E. Thompson, Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

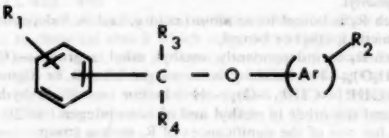
Filed Aug. 30, 1973, Ser. No. 393,116
Int. Cl.² B41M *5/16*
U.S. Cl. 428—537 15 Claims

1. A pressure-sensitive recording paper system comprising
a. a supporting web or sheet material,
b. mark forming components arranged in contiguous juxtaposition and supported by said sheet material, said components comprising a chromogenic material and an electron accepting material of the Lewis acid type reactive with said chromogenic material to produce a mark when brought into reactive contact, and
c. a pressure releasable liquid solvent for said chromogenic mark forming component, said solvent comprising a benzyl aryl ether represented by the structure



wherein Ar is an aryl radical selected from the group consisting of phenyl, tolyl, and xylenyl; R_1, R_3 and R_4 are individually hydrogen or an alkyl group having from 1 to 4 carbon atoms; and R_2 is hydrogen or from 1 to 4 alkyl groups, alike or unlike, the total carbon atom content of R_2 being not greater than 6.

12. A method of marking on a substrate by developing a color from colorless or substantially colorless chromogenic compounds which comprises contacting said chromogenic compounds and an electron accepting material of the Lewis acid type in the presence of a liquid solvent comprising a benzyl aryl ether represented by the structure



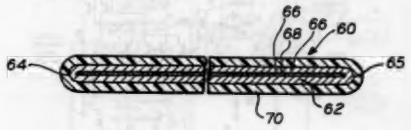
wherein Ar is an aryl radical selected from the group consisting of phenyl, tolyl, and xylenyl, R_1, R_3 and R_4 are individually hydrogen or an alkyl group having from 1 to 4 carbon atoms; and R_2 is hydrogen or from 1 to 4 alkyl groups, alike or unlike, the total carbon atom content of R_2 being not greater than 6.

3,968,321

OFFSET "O" INTERNAL SHIELD DESIGN FOR PCM TELEPHONE CABLES

Jerzy Adam Olszewski, Edison, N.J., and Anthony P. Gabriel, Staten Island, N.Y., assignors to General Cable Corporation, New York, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,016
Int. Cl.² H01B *11/04*
U.S. Cl. 174—36 14 Claims



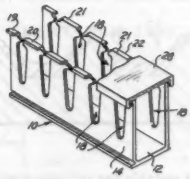
1. A strip for a telephone cable shield including a metal strip coated on one side with dielectric coating material and folded back on itself to form a shield having edges formed by the folds and having two layers of metal across most of its width of the shield and with two layers of dielectric coating, one on the upper and the other on the lower side of the shield, said coating extending around the folds of the metal, the original edges of the strip being at different distances from the folded edges.

3,968,322

WIRING DUCT

Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.

Continuation of Ser. No. 166,217, July 26, 1971, abandoned, which is a continuation of Ser. No. 825,784, May 19, 1969, abandoned. This application Mar. 22, 1973, Ser. No. 343,950
Int. Cl.² H02G *3/04*
U.S. Cl. 174—72 A 10 Claims



1. In a wiring duct for supporting a plurality of electrical conductors generally of a predetermined diameter, said duct comprising an elongated channel of a substantially U-shaped cross section defining a substantially planar base portion and a pair of substantially planar sidewalls projecting integrally from said base portion, a plurality of evenly spaced substantially alike slits formed in at least one of said sidewalls and having parallel axes of symmetry normal to a terminal edge of said sidewall and said slits being open to said edge of said sidewall, a plurality of evenly spaced substantially alike finger-like members being thusly defined between consecutive slits, each of said finger-like members being widened at the end portion thereof proximate the terminal edge of said sidewall for defining a narrow gap open end for each of said slits, said channel being made of a substantially flexible material for permitting deflection of said finger-like members in a direction generally normal to the longitudinal axis of said channel to provide widening of said narrow gap open end of said slit for passage therethrough of said electrical conductors, the side of said slit proximate said terminal edge of said sidewall being defined by a pair of aligned separate side portions of consecutive finger-like members substantially parallel to said base portion of the channel, the improvement comprising each of said slits having its opposite sides substantially straight and diverging one from the other in the direction of said terminal edge such that each of said slits is wider proximate the widened end portion of said finger-like members than proximate said base portion, said sides being disposed at an angle of the order of between 5° and 30°, said sides further being joined proximate said base portion by an arcuate side, the ratio of the width of said slit at the widest portion thereof to the width of said slit at the narrowest portion thereof being at least 1.5 to 1 and the width of the narrow gap open end of said slits being less than the width of each of said slits at the narrowest portion thereof.

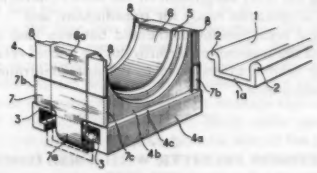
7. In a wall for supporting a plurality of electrical conductors, said wall comprising a planar portion, a plurality of evenly spaced substantially alike slits formed in said planar portion and having parallel axes of symmetry normal to a terminal edge of said planar portion and said slits being open to said edge of said planar portion, a plurality of evenly spaced substantially alike finger-like members being thus defined between consecutive slits, each of said finger-like members being widened at the end portion thereof proximate the terminal edge of said planar portion for defining a narrow gap open end for each of said slits, said wall being made of a substantially flexible material for permitting deflection of said finger-like members in a direction generally normal to the plane of said planar portion to provide widening of said narrow gap open end of each of said slits for passage therethrough of said electrical conductors, the side of each of said slits proximate said terminal edge of said planar portion being defined by a pair of aligned separate side portions of consecutive finger-like members substantially parallel to said terminal edge, the improvement comprising each of said slits having its opposite sides substantially straight and diverging one from the other in the direction of said terminal edge, said sides being disposed at an angle of the order of between 5° and 30° such that the width of each of said slits is greater proximate the widened end portion of said finger-like members than proximate said base portion, and the ratio of the width of each of said slits at the widest portion thereof to the width of each of said slits at the narrowest portion thereof being at least 1.5 to 1.

3,968,323

CLAMP WITH GROUNDING MEANS FOR HOLDING CONDUCTORS BETWEEN PARALLEL SUPPORT RAILS

Lucien Blanchet, Le-Vesinet, France, assignor to Elhyco AG, Glarus, Switzerland

Filed Jan. 31, 1975, Ser. No. 546,181
Claims priority, application France, Feb. 5, 1974, 74.03861
Int. Cl.² H01R *3/04*; F16L *3/10*
U.S. Cl. 174—135 6 Claims



1. In an assembly comprising a pair of channel-shaped parallel rails and at least one pair of opposed jaws made of an insulating material and located between said rails to hold elongated members in a position extending transversely with respect to said rails, said jaws having gripping surfaces for engaging said elongated members, and said rails having external projections on their sides cooperating with longitudinal

retaining means on the jaws, and each jaw engaging a selected one of said rails having a channel facing said one rail, the improvement according to which the sides of each channel in a jaw define inner slots receiving said projections with a significant tolerance, and the gripping surface of one jaw of each pair of opposed jaws is provided with a metal grounding strip in electrical contact at at least one end with at least one metal member ensuring an electrical connection between said grounding strip and said one rail, said metal member having a portion which forms a generally cylindrical spring compressed between the bottom of said one rail and the bottom of the channel in said one jaw to ensure the elastic suspension of the said jaws relative to said one rail after mounting of the said elongated members.

3,968,324

CIRCUIT ARRANGEMENT FOR SYNCHRONIZING THE LETTERS/FIGURES LEVELS OF SEVERAL INPUT AND OUTPUT DEVICES IN TELEPRINTERS

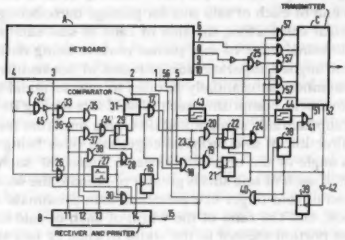
Roman Lutz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 6, 1975, Ser. No. 555,880

Claims priority, application Germany, Mar. 18, 1974, 2413013

Int. Cl.² H04L *17/02*

U.S. Cl. 178—2 R **3 Claims**



1. An arrangement for synchronizing input/output devices in teleprinters as relates to a subdivision, necessitated by the use of a five-bit code for communications transmission purposes, of the total quantity of characters into letters/figures level assignments, the teleprinter including a receiver and a transmitter, said arrangement comprising:

a storage device connected to the transmitter and to the receiver for storing the level assignment of the last transmitted or received character from the sequence of transmitted and received characters;

a comparator connected to said storage device for comparing the level assignment of the stored character with that of a character ready for transmission; and

a logic arrangement connected between said comparator and the transmitter for introducing a level-related switching symbol in response to disparity determined by said comparator.

3,968,325

TELEVISION RECEIVER WITH NOISE IMMUNE AFC CIRCUIT

Louis Joseph Gerardus Beriere, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

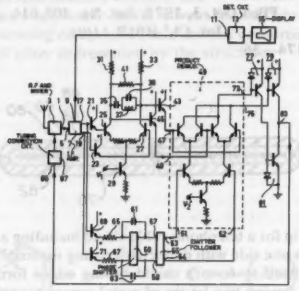
Filed July 24, 1974, Ser. No. 491,557

Claims priority, application Netherlands, Aug. 3, 1973, 7310739

Int. Cl.² H04N *5/50*

U.S. Cl. 178—5.8 AF **2 Claims**

1. An automatic tuning correction circuit for a television signal having desired video and audio frequencies, said circuit comprising a frequency correction circuit; phase detector means for generating a tuning correction signal having a first input for receiving said television signal, a second input, and an output coupled to said correction circuit; and means for eliminating erroneous tuning correction signals due to noise



comprising a filter having an input means for receiving said television signal and an output coupled to said generating means second input, said filter having a response pole at the desired video frequency and a response zero at a frequency intermediate said desired video and audio frequencies.

3,968,326

TRAPEZOIDAL SMOOTH GROOVES FOR VIDEO DISC

Richard William Nosker, Princeton, and Leonard Pincus Fox, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 331,235, Feb. 9, 1973, Pat. No. 3,882,214. This application Sept. 6, 1974, Ser. No. 503,680

Int. Cl.² H04N *5/76*; G11B *11/12*

U.S. Cl. 178—66 R **3 Claims**

1. A disc record suitable for recording information thereon comprising:

a disc substrate having a spiral groove of trapezoidal cross-sectional shape formed therein; and

a surface material coating said trapezoidal spiral groove, said coated spiral groove having a surface of regularly curved cross-sectional shape including inflection points on each wall of said coated groove located closer to the peaks than to the valley of said coated groove, the surface curvature in said valley between said inflection points substantially corresponding to an arc of a circle.

3,968,327

TELEVISION SIGNAL DISTRIBUTION SYSTEM

Ray V. Gregg, III, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed June 15, 1973, Ser. No. 370,402

Int. Cl.² H04N *7/10*; H04H *1/08*; H04N *7/18*

U.S. Cl. 178—6.8 **5 Claims**

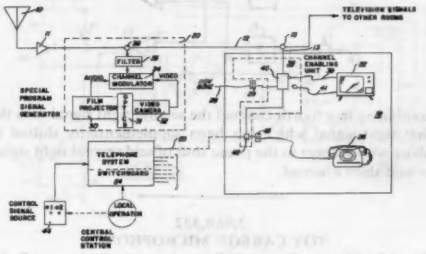
3. A television signal distribution system for a plurality of multiple channel receivers, comprising:

a source of television signals for each of a plurality of channels;

circuit means including a low impedance transmission line connected from said source of television signals to each

of said receivers for conducting said television signals from said source to each of said receivers;

a band suppression channel filter for at least one of said channels connected between said circuit means and each of said receivers, said filter having a series connected inductor and capacitor connected in shunt across said



transmission line and resonant at the frequency of the video carrier of the television signal;

a central control station; and

means actuated by an operator at said central control station and operative without manipulation of any circuit control by the viewer at the receiver to disable the channel filter at a selected receiver.

3,968,328

CIRCUIT FOR AUTOMATICALLY CORRECTING THE TIMING OF CLOCK PULSE IN SELF-CLOCKED PULSE SIGNAL DECODERS

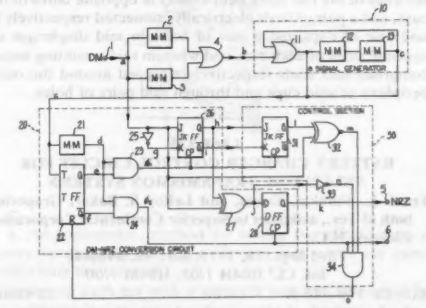
Yoshikazu Tsuchiya; Takenori Sonoda, 3, both of Tokyo, and Jun Takayama, Kokubunji, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 533,773

Claims priority, application Japan, Dec. 18, 1973, 48-142049

Int. Cl.² H04L *25/40*

U.S. Cl. 178—88 **12 Claims**



1. A circuit for decoding a dynamically modulated non-return-to-zero signal with an encoded clock signal of a predetermined repetition rate comprising:

A. first means connected to receive the dynamically modulated signal and to generate a continuous series of pulses at twice the repetition rate of the clock signal encoded into the dynamically modulated signal;

B. a selector circuit connected to the first means to separate the pulses into first and second interleaved sets of pulse signals, each having a repetition rate corresponding to the repetition rate of the clock signal in the dynamically modulated signal;

C. retaining means connected to receive the dynamically modulated signal and connected to the selector circuit to retain information concerning the state of alternate half bit cells of the dynamically modulated signal and to compare the retained information with the state of part of another half bit cell within a group of three successive bit cells to produce a first signal having one state when the states of the compared half bit cells are in the same state with respect to each other and having the opposite state when the compared half bit cells are in mutually opposite states;

D. first comparison means to compare relative states of a second pair of half bit cells within the group of three bit cells to produce a second signal, at least one of the half bit cells of the second pair being spaced in time by at least one bit cell from one of the half bit cells used to generate the first signal; and

E. second comparison means to compare the first and second signals, the second comparison means being connected to the selector circuit to control the operation thereof to select the correct one of the sets of interleaved pulse signals.

3,968,329

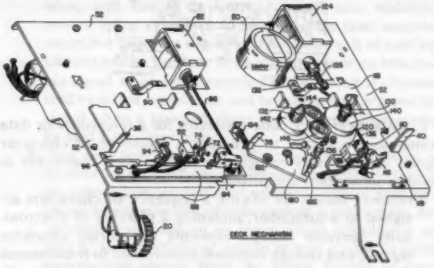
TELEPHONE ANSWERING APPARATUS

James R. Darwood, Cerritos, Calif., assignor to T.A.D. Avanti, Inc., Paramount, Calif.

Filed Feb. 10, 1975, Ser. No. 548,413

Int. Cl.² G11B *15/68, 5/54*

U.S. Cl. 179—6 R **9 Claims**



1. A telephone answering apparatus including in combination: means mounted in said apparatus for receiving a removable magnetic announcement tape unit; first capstan drive means mounted in said apparatus on one side of the path of the tape in said removable tape unit for driving the tape; a first pinch roller assembly mounted in said apparatus on the opposite side of the path of said tape; first solenoid means mechanically coupled to said first pinch roller assembly for selectively causing the first pinch roller assembly to be drawn against the tape to move the tape into driving engagement with the first capstan drive means; means mounted in said apparatus for receiving a removable cassette-type magnetic message tape unit; a second capstan drive means mounted in said apparatus on one side of the path of the tape in the message tape unit for driving the message tape; a second pinch roller assembly mounted in said apparatus on the opposite side of the path of the tape in said message tape unit; second solenoid means mechanically coupled to said second pinch roller assembly for selectively moving said second pinch roller assembly toward the second capstan drive means to move the tape in said message tape unit into driving engagement with the capstan drive means; a drive motor mounted in the apparatus and mechanically coupled to the first and second capstan drive means; first and second spindle means mounted in the apparatus for receiving the cassette-type message tape unit; mechanical coupling means for selectively coupling the drive motor to the first and second spindle means to drive the tape in the message tape unit selectively in a forward and in a rewind

direction; and third solenoid means connected to said coupling means for changing the coupling of the drive motor from one of the spindle means to the other whenever the third solenoid means is energized.

3,968,330

CODE GENERATOR FOR TELEPRINTERS OR DATA PRINTERS

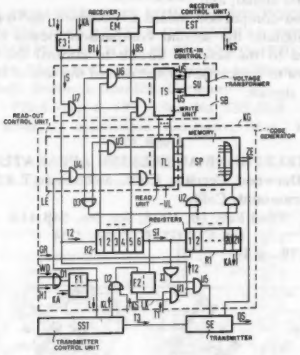
Martin Ludwig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 16, 1975, Ser. No. 541,616

Claims priority, application Germany, Jan. 25, 1974, 2403599

Int. Cl.² H04L *15/00*

U.S. Cl. 178—79 **10 Claims**



1. An answer back code generator for a teleprinter or data printer and operated to generate a sequence of character signals as subscriber recognition signals when connected to another subscriber, comprising:

a memory means for storing a sequence of characters assigned to a subscriber, including a plurality of electronically operable storage elements for storing character signals, said storage elements constructed to retain stored data unaltered upon disconnection of the operating voltage;

a pulse generator;

register means operably connected to said memory means and containing the addresses of particular operated storage elements, including means connected to said pulse generator for receiving pulse trains and responsive thereto to step-by-step alter the content of said register means; and

a read-out control unit connected to said memory means and adapted to receive a reading control signal to cause reading of the characters stored in the addressed storage elements.

3,968,331

ENCODING AND DECODING SYSTEM FOR QUADRAPHONIC SOUND

Robert Nestor Joseph van Sluys, Eindhoven, Netherlands

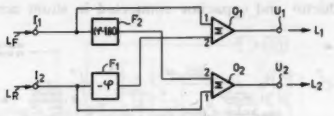
Filed July 2, 1974, Ser. No. 485,204

Claims priority, application Netherlands, July 9, 1973, 7309536

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **7 Claims**

1. Method of encoding four quadraphonically correlated signals for transmission via four channels, said method comprising combining in a first channel a first left signal with a second left signal which has been shifted in phase, combining in a second channel the second left signal with the first left signal which has been supplementarily shifted in phase with respect to the phase shift of said second left signal in said first channel, combining in a third channel a first right signal with a second right signal which has been shifted in phase, and



combining in a fourth channel the second right signal with the first right signal which has been supplementarily shifted in phase with respect to the phase shift of said second right signal in said third channel.

3,968,332

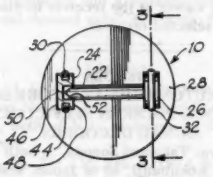
TOY CARBON MICROPHONE

Dinsdale Thorpe, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 5, 1975, Ser. No. 584,195

Int. Cl.² H04R *21/02*

U.S. Cl. 179—141 **2 Claims**



1. A resistance microphone comprising a diaphragm formed of a plastic sheet, a pair of carbon cups having outer peripheries and circular bores, means for mounting said cups on said diaphragm in spaced apart opposed relationship, a carbon cylindrical rod having generally conical opposite ends, opposite ends of the rod being held loosely in opposite bores of the cups, and a pair of leads electrically connected respectively to said pair of cups and a pair of holes in said diaphragm on opposite sides of each cup, and wherein said mounting means comprises said leads respectively wrapped around the outer periphery of said cups and through said pairs of holes.

3,968,333

BATTERY CHARGER CONTROL CIRCUIT FOR TELEPHONE TRANSMISSION SYSTEMS

Frank L. Simokat, Euless, and LeRoy S. Baker, Grapevine, both of Tex., assignors to Superior Continental Corporation, Hickory, N.C.

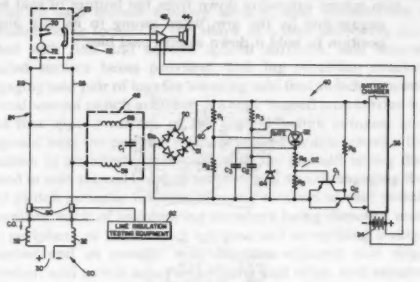
Filed Sept. 18, 1973, Ser. No. 398,448

Int. Cl.² H04H *1/08;* **H04M** *1/00*

U.S. Cl. 179—16 A **22 Claims**

1. A method of temporarily electrically disconnecting a rechargeable, equipment-powering battery from a plural conductor transmission line in a telephone transmission circuit in which a telephone is electrically connected by said line to a central office, and in which said battery is located remotely from the central office and is normally electrically connected to said line when said line is idle to be recharged by current fed down said line from a d.c. power source which is located at said central office, said method comprising the steps of electrically disconnecting said battery from said line and charging a capacitor either upon transferring said telephone from its on-hook condition to its off-hook condition or upon disconnecting said line from said source, and utilizing the charge stored on said capacitor to temporarily delay the re-

connection of said battery to said line following establishment of a condition in which said telephone is in its on-hook condition and said line is electrically connected to a selected power source.

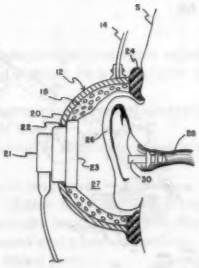


3,968,334

AUDIOMETRIC METHOD AND APPARATUS FOR TESTING THE EFFECTIVENESS OF HEARING PROTECTIVE DEVICES

Miguel Padilla, 1830 Avenida del Mundo, No. 1712, Coronada, Calif. 92118

Filed Oct. 10, 1974, Ser. No. 513,604
Int. Cl.² H04R *29/00*
U.S. Cl. 179—175 **6 Claims**



1. An audiometric method for testing the effectiveness of insert-type hearing protective devices in a user's ear canals comprising the steps of:

enclosing each ear with a separate portable acoustical enclosure;

positioning the enclosure so that each ear pinna is freely spaced from the respective enclosure to avoid distortion of the ear canals by physical contact therewith,

attaching and sealing the enclosures to the user's head to provide a free field condition for each ear without the need to restrict movement of the head,

applying predeterimed audiometric signals to each of said ears within the enclosures in two conditions, namely with the protective devices removed and with the protective devices present,

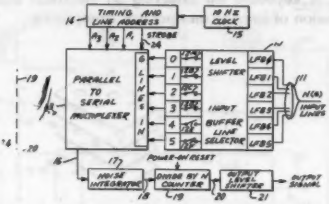
ascertaining the user's hearing threshold levels in both conditions to determine the relative noise attenuation of the protective devices.

3,968,335

DIAL TONE SPEED MONITOR

Leroy H. Werner, Burlington, and Ralph I. Nagata, Berlin, both of N.J., assignors to Telesciences, Inc., Moorestown, N.J.

Filed Feb. 3, 1975, Ser. No. 546,199
Int. Cl.² H04M *3/36*
U.S. Cl. 179—175.2 C **5 Claims**



1. Apparatus for monitoring the signal states on a plurality of independent signal lines and for generating signals which indicate the average condition of the signal state on all of the monitored lines, comprising in combination,

a. parallel to serial electrical signal input multiplexer means having a plurality of independent input circuits adapted for connection to a plurality of independent input signal lines, and having an output circuit, said multiplexer means being operative to sample on a time sequential repetitive basis the signal condition on each of said input circuits and to produce at its output circuit an intermediate signal whenever a sampled input circuit is characterized by a first signal state and to produce no intermediate signal when a sampled input circuit is not characterized by said first signal state,

b. line selection means for selecting for monitoring any number of the plurality of independent signal lines and for connecting the same to selected ones of said multiplexer means plurality of independent input circuits, and

c. counter means having an input circuit operatively coupled to said multiplexer means output circuit to receive intermediate signals from the latter, having an output circuit, and having count selection means effective to set the counter to count a number of intermediate signals from said multiplexer equal to the number of independent signal lines selected for monitoring by said line selection means and operative to thereupon generate an output count signal at its output circuit

whereby, an output count signal can occur at most once during each multiplexer scan time so that an average condition of the signal state on all of the monitored lines is obtained from the number of output count signals which occur during any particular time interval.

3,968,336

KEYBOARD SWITCH ASSEMBLY HAVING MOVABLE CONTACT, AND SUPPORTING HELICLINE TYPE LEGS DISPOSED CO-PLANAR TO COMMON CONDUCTIVE SHEET

Wendell C. Johnson, Topanga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 23, 1974, Ser. No. 508,480
Int. Cl.² H01H *13/26, 1/06*
U.S. Cl. 200—5 A **50 Claims**

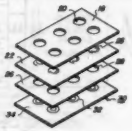
14. A keyboard switching device comprising:

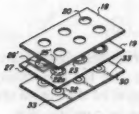
a first electrically conductive member having a plurality of planar spring-like patterns formed on separate conductive surfaces thereof, each of said patterns comprising a plurality of unconnected, curved slots radiating continuously outwardly from a common portion thereof,

a plurality of conductive members, at least some of said plurality of conductive members being positioned adjacent at least some different ones of said common portions; and

electrically insulating means for normally separating said adjacent center portions and contact members but permitting each one of said adjacent common portions to effect a switching action when said one common portion is forced from the plane of said first member.

17. A keyboard for effecting an electrical change upon depression of keys by an operator, comprising:





a plurality of conductive surfaces supported in a common plane by electrically insulating support means, each of said surfaces having a plurality of unconnected, curved slots radiating continuously outward from a common portion thereof;

a contact board positioned adjacent said support means and having a plurality of electrical contacts, at least some of said plurality of contacts in axial alignment with different ones of said common portions;

said electrical insulating support means normally separating said axially aligned electrical contacts from said common portions but permitting each of said common portions to be forcibly moved toward said electrical contact in axial alignment therewith to effect a switching action.

3,968,337

DOOR-ACTUATED ALARM SWITCH

Donald G. Cole, 1528 E. Broadmoor St., Springfield, Mo. 65804

Continuation-in-part of Ser. No. 492,169, July 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 402,028, Oct. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 267,565, June 29, 1972, abandoned. This application Apr. 30, 1975, Ser. No. 573,321

Int. Cl.[2] H01H *3/16, 3/20*

U.S. Cl. 200—61.62 **20 Claims**

1. An alarm switch for actuation by a door comprising:

a body of electrical insulation material adapted to be mounted on a wall above a door opening on the side of the wall toward which the door in the door opening swings open,

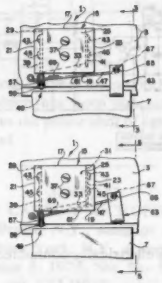
first and second electrical terminals carried by the body extending down at the bottom of the body and adapted for attachment of electrical lines thereto for connection of the switch in an alarm circuit, the lower ends of said terminals being spaced endwise of said body,

an electrically conductive switch arm,

means mounting the arm at the lower end of the first terminal for up and down swinging movement and also for swinging movement about a generally vertical axis relative to the body with said arm in electrically conductive relation with the first terminal, said arm being swingable upwardly generally in the plane of the terminals to a raised circuit-closing position engaging the lower end of the second terminal, and being biased to swing upwardly,

said arm being swingable downwardly against the bias and laterally away from its said raised circuit-closing position to a position for actuation by the door angled toward the door,

stop means extending down from the bottom of said body engageable by the arm when swung to its said angled position to hold it down against said bias,



and means at the free end of the arm engageable by the door on opening of the door when the arm is in its said angled position for swinging the arm out from under said stop means, whereupon the arm swings up into engagement with said second terminal.

3,968,338

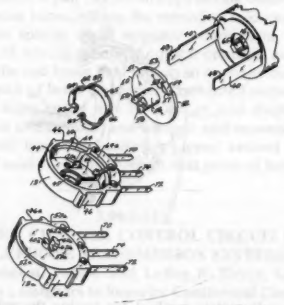
ELECTRICAL SWITCH CONTROL

John Zdanys, Edwardsburg, Mich., assignor to CTS Corporation, Elkhart, Ind.

Filed Aug. 13, 1974, Ser. No. 496,973

Int. Cl.[2] H01H *19/32*

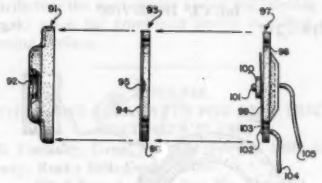
U.S. Cl. 200—68 **11 Claims**



1. In a tandem switch control, the combination of first and second housing sections, each housing section defining a cavity, said first housing section being provided with an aperture, an annular bearing member carried by each of said housing sections, first and second contact means disposed within each of said housing sections, a common contact means disposed between said first and second contact means in each of said housing sections, a contact spring disposed within each of said housing sections engaging said first contact means and said common contact means in a first stable position and engaging said second contact means and said common contact means in a second stable position, a first switch actuator closing the cavity of said first housing section, said first switch actuator being formed in the shape of a disk and being provided with a first surface, a pair of lugs extending forwardly from said first surface into the aperture in said first housing

section, a wedge shaped cam carried by said first surface and disposed near the periphery of said first switch actuator for rotation in an interference path with the contact spring in said first housing section, a second switch actuator closing the cavity of said second housing section, said second switch actuator being formed in the shape of a disk and being provided with first and second spaced surfaces, said second spaced surface being provided with lug receiving notches engaging said pair of lugs for securing said first switch actuator to said second switch actuator, a wedge shaped cam carried by said first spaced surface of the second switch actuator and disposed near the periphery of said second switch actuator for rotation in an interference path with the contact spring disposed in said second housing section, and a shaft engaging the first switch actuator for simultaneous rotation of said switch actuators, each of said bearing members being disposed near the periphery of the housing sections and comprising a ridge member and an annular wall disposed adjacent said ridge member, said switch actuator abutting said ridge, said annular wall being disposed adjacent the periphery of said actuator.

3,968,339
APERTURED DIAPHRAGM END VALVE
Joe Heaton, 120 W. Washington St., Tipton, Ind. 46072
Filed Nov. 25, 1974, Ser. No. 527,092
Int. Cl.² H01H *13/16*
U.S. Cl. 200—86 A **7 Claims**



1. An apertured diaphragm end valve capable of providing controlled pressure leakage in a pneumatic system comprising:

A. an end plate containing a central aperture for connection to a pneumatic hose;

B. a diaphragm element for engagement with said end plate comprising;

i. a rigid support ring; and

ii. a resilient blatter defined by said support ring and having a centrally located aperture therein;

C. a backing second end plate containing:

i. an aperture bleed port;

ii. metal contacts for closing an electric circuit upon deflection of said diaphragm;

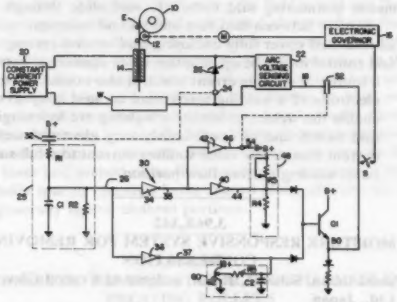
iii. a metallic leaf spring which touches said metal contacts upon the closing of said electric circuit and contained thereon, a projection aligned with said aperture of said blatter.

3,968,340
MIG STARTING SYSTEM
Robert Charles Fernicola, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 3, 1974, Ser. No. 485,746
Int. Cl.² B23K *9/12*
U.S. Cl. 219—131 F **4 Claims**

1. A starting system for establishing an inert gas shielded arc between a consumable wire electrode and a workpiece from a constant current power supply which comprises, in combination: a control circuit, said control circuit comprising:

a. means responsive to the voltage across the electrode to workpiece for providing a DC output signal of a first predetermined magnitude when said voltage exceeds a first predetermined level representative of an open circuit;

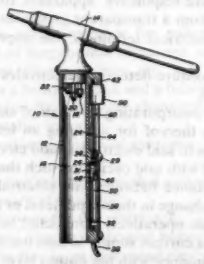
b. means for decreasing said DC output signal over a predetermined time period to a second predetermined magnitude when said voltage drops below a second predetermined level representative of a short circuit; and



c. means responsive to said first predetermined magnitude for providing a first speed control signal and to said second predetermined magnitude for providing a second speed control signal; and

means for automatically advancing said wire electrode toward the workpiece at a starting rate of speed to establish the arc in response to said first speed control signal and at a normal welding rate of speed in response to said second speed control signal.

3,968,341
WELDING TORCH WITH INTEGRAL CURRENT CONTROL
Richard William Manning, Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 9, 1974, Ser. No. 496,052
Int. Cl.² B23K *9/10*
U.S. Cl. 219—132 **4 Claims**



1. An arc-welding torch handle comprising in combination:

a hollow elongate body having a first end and a second end said body being generally cylindrical in cross-section with a generally flat planar top portion having therein a first recess and a second recess in tandem with an aperture therebetween said second recess having as its bottom surface an electrical shielding plate;

means for mounting a welding torch head including an electrode on the first end of said body and communicating with the hollow interior of said body;

linearly actuated control means on said body, said control means comprising in combination a linear switch and linear potentiometer both of which are disposed in said

second recess in said handle in tandem relationship and activated by a single linear slide;

a rail mounted linearly slidable thumb activated button mounted in said first recess in said handle said button traversing a linear path of fixed length which path can be fully traversed by a welder's thumb when gripping said body without shifting of the welder's grip;

means connecting said button to said slide through said aperture between said first and second recesses;

an insulated cover fully enclosing said second recess;

said control means being adapted, when connected between a source of welding crrent which is also connected to the electrode of a welding torch head on said body so as to enable the welder to initiate a welding arc by energizing said switch and to continuously vary electrical welding current from a low value welding current to a full source rated welding current flow position.

3,968,342

MOISTURE RESPONSIVE SYSTEM FOR REMOVING CONDENSATION

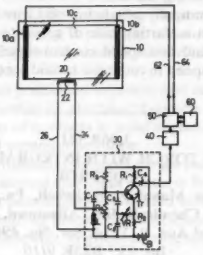
Hiroshi Inaba, Saitama, Japan, assignor to Central Glass Co., Ltd., Japan

Filed July 24, 1972, Ser. No. 274,611

Claims priority, application Japan, July 31, 1971, 46-57804

Int. Cl.[2] B60L *1/02*

U.S. Cl. 219—203 **2 Claims**



1. In moisture-responsive apparatus for removing vapor condensation from a transparent glass sheet having a heating element and electrical terminals, the improvement comprising:

a pair of moisture-detecting electrodes mounted on said glass sheet;

an oscillator incorporating said pair of electrodes as component parts thereof for applying an internally developed AC voltage to said electrodes, said electrodes being interconnected with said oscillator such that a change in electrical resistance between said electrodes causes a corresponding change in the output level of said oscillator; and

a relay circuit operatively connected to said oscillator for switching a current supply to said heating element on and off in accordance with the output level of said oscillator.

3,968,343

FUSER ROLL TEMPERATURE REGULATOR PROBE

Zenon Guran, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1974, Ser. No. 518,552

Int. Cl.[2] H05B *1/00*; G03G *15/00*

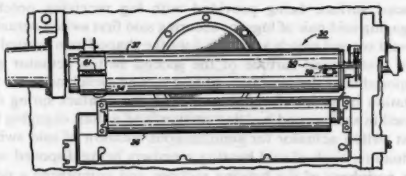
U.S. Cl. 219—216 **6 Claims**

1. Apparatus for sensing surface temperatures of a heated roll utilized for fusing toner images, said apparatus comprising:

temperature responsive means;

a thermally conductive cap member having a generally planar surface with an area protruding outwardly therefrom to form a recess for receiving said temperature responsive means;

a first support means for supporting said thermally conductive cap member, said first support means being thermally insulative, said temperature responsive means being recieved in said recess; and



second support means carrying said first support means, said second support means being pivotally mounted by a pin member whereby said protruding area can be biased into contact with the surface of said heated roll.

3,968,344

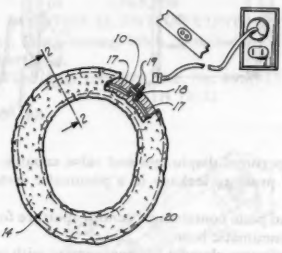
WARMTH INTO OR ON TOILET SEATS

Donald L. Gallegos, Sr., Chama, N. Mex., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 30, 1975, Ser. No. 591,346

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—217 **4 Claims**



1. An electrically heated toilet seat pad said pad comprising a resilient material having the configuration of a toilet seat, said pad having integrally formed inturned edges on its underside, and heating elements in said pad arranged to be connected to a wall outlet said integrally formed inturned edges comprising flexible fastening means arranged to detachably secure said pad to said toilet seat.

3,968,345

COMBINED WAX AND EDGE SHARPENING APPARATUS FOR SKIERS

Michael Kollmeder, Gorzerstr. 5, 8 Munich 80, Germany

Filed Sept. 4, 1974, Ser. No. 503,526

Claims priority, application Germany, Sept. 17, 1973, 2346717

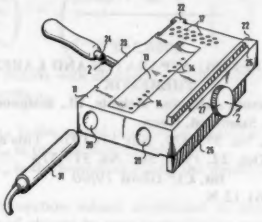
Int. Cl.[2] A63C *11/04*; H05B *1/00*

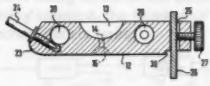
U.S. Cl. 219—228 **16 Claims**

1. A combined edge sharpener and waxing device for use with wax and heating means to wax and sharpen skis comprising:

a manually manipulable file holder carrying at least one metal file, which holder has a guide surface standing substantially perpendicularly to the cut of the metal file, and in which the metal file can be clamped in variable positions relative to the transverse direction of the file holder,

the file holder defining a heatable and flat waxing implement including means forming a wax melting container, means for receiving container heating means to heat the container to wax melting temperature, means extending from the container to the guide surface through which





melted wax can flow to the guide surface, said guide surface defining a wax distribution surface for evenly distributing the melted wax across the running surface of the ski when the combined device is pulled along said running surface.

3,968,346

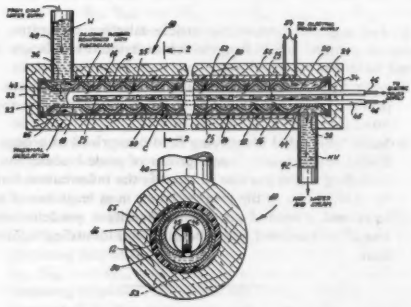
METHOD AND APPARATUS FOR ELECTRICALLY HEATING A FLUID

Ralph D. Cooksley, Great Meadow Towers, 1800 Silas Deane Highway, Rocky Hill, Conn. 06067

Filed June 1, 1973, Ser. No. 366,050

Int. Cl.² H05B *1/00;* **F24H** *1/12*

U.S. Cl. 219—305 **10 Claims**



1. A heat exchanger comprising a plurality of generally coaxial elongated tubes including a first inner tube providing a first inner tube longitudinally extending fluid passageway within the first tube and a second tube surrounding the first tube and defining therewith a second outer longitudinally extending fluid passageway around the first inner tube, first means for conducting fluid to one longitudinal end of each of the fluid passageways for providing flow of the fluid along each fluid passageway in a respective one longitudinal direction therein from its one longitudinal end towards its other longitudinal end respectively, outlet conduit means for conducting fluid from each of the fluid passageways comprising a plurality of longitudinally spaced openings in the first inner tube for conducting fluid from one of the fluid passageways to the other fluid passageway and second means for conducting, from said other longitudinal end of said other fluid passageway, the fluid conducted to said other fluid passageway by said first means and the fluid conducted through said longitudinally spaced openings to said other fluid passageway from said one fluid passageway, third means closing said other longitudinal end of said one fluid passageway, and heater means within said one fluid passageway for heating the fluid in said one fluid passageway whereby the fluid conducted along said one fluid passageway is first heated by the heater means and is then conducted through the longitudinally spaced openings in the first inner tube to combine with the fluid conducted along said other passageway, said first inner tube having at least one generally helical corrugation extending longitudinally therealong and forming a generally helical ridge and groove providing inner and outer generally helical channel portions in the first inner and second outer fluid passageways, and the longitudinally spaced openings being spaced along at least one of the generally helical channel portions.

3,968,347

MONOLITIC HEATING STATOR FOR THERMALLY TREATING ROLLERS

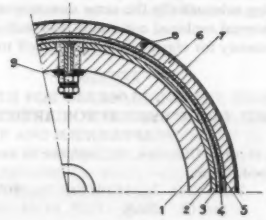
Bernard Isoard, Ecully, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Feb. 7, 1975, Ser. No. 547,944

Claims priority, application France, Feb. 28, 1974, 74.07175

Int. Cl.² H05B *3/50*

U.S. Cl. 219—530 **10 Claims**



1. A monolithic stator member for rollers used for the thermal treatment of longitudinal structures, such as continuous filaments, yarns, slivers, rovings, etc., said member simultaneously acting as a heating organ and a bearing for the roller rotor, and comprising the following elements:

a cylindrical metallic support,

a first layer of mineral electrical insulator, sprayed on the support,

an electrical heating resistance, coiled around the first layer of mineral electrical insulator,

electrical connections for the resistance,

a layer of thermal insulator sprayed between the metallic support and the first layer of mineral electrical insulator,

a second layer of mineral electrical insulator, sprayed covering the first layer of mineral electrical insulator and in which the electrical resistance is embedded and

a sprayed on friction layer, said layers being concentric to and overlying the full cylindrical surface of said support for that length of it which is adapted to underlie the rotor.

3,968,348

CONTAINER HEATING JACKET

Phillip W. Stanfield, Rte. 1, Box 45, Osborne, Kans. 67473

Filed May 31, 1974, Ser. No. 474,940

Int. Cl.² H05B *3/58*

U.S. Cl. 219—535 **5 Claims**

1. A container heating jacket comprising:

a. a cylindrical wall structure defined by at least two laminated fiber glass mats bonded together by a thermosetting plastic;

b. a resistance heating element placed between said mats and adapted for connection to a power source for generating heat; and

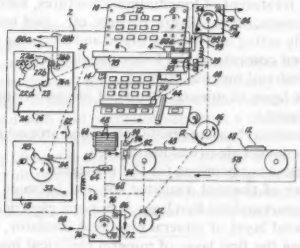
c. said wall structure being cut along a longitudinal axis to permit the jacket to be flexed and placed over a container having substantially the same dimensions as the jacket in its normal replaced condition, said wall structure having a memory for elastically holding itself to said container.

3,968,349

CONTROL LOGIC SYSTEM FOR ARTICLE-LABELING APPARATUS

Mark A. Hunter, Glenview, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 26, 1974, Ser. No. 509,699
Int. Cl.[2] G06K *13/18, 15/18, 7/14*
U.S. Cl. 235—61.6 R **14 Claims**



13. Apparatus for producing a control signal in response to a data code read from a sheet-like form, said form having a plurality of rows of labels, said rows having a plurality of labels and an adjacent data code identifying groups of labels, said form being fed to labeling means for cutting and application of said labels to conveyed articles, said apparatus comprising:

means for reading the data code adjacent the rows of labels, said reading means providing code signals,

manual means for producing an orientation signal indicative of which end of the sheet like form is first fed into the labeling means,

electronic control means responsive to said code signals and said orientation signal for providing a control signal, and

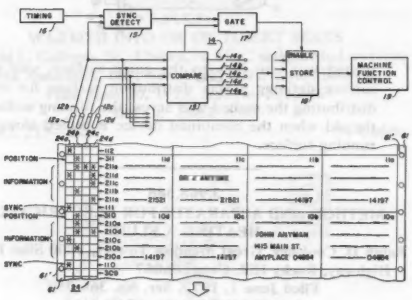
means for providing a visual indication of data code identified groups of conveyed articles labeled by said labeling means, said indication means responsive to said control signal.

3,968,350

ARTICLE LABELING APPARATUS AND LABEL FORM THEREFOR

Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 379,977, July 17, 1974. This application Oct. 22, 1974, Ser. No. 517,274
Int. Cl.[2] G06R *19/00*
U.S. Cl. 235—61.12 N **4 Claims**



1. For use with automatic article labeling apparatus, an array of printed labels from which individual labels are derived, said array comprising:

a label field having a plurality of rows and columns of printed labels; said label field being adapted to be separated into individual labels; and

a discardable label identifying field comprised of groups of coded sense marks, each group of coded sense marks including a first portion to identify the information borne by at least one of the printed labels in at least one of said rows and a second portion to identify a predetermined one of said printed labels bearing said identified information.

3,968,351

OBJECT CLASSIFICATION AND COUNTING MACHINE HAVING CORRECTION APPARATUS FOR REMOVING BIAS FROM COUNT

James D. Baker, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 13, 1973, Ser. No. 397,047
Int. Cl.[2] H03K *21/10*
U.S. Cl. 235—92 PC **4 Claims**

1. In a count correction apparatus for a system classifies classified objects by type to provide a signal readout of the count of the objects of each type, and further in which system there is a bias or error in the count of objects of each type because of limitations in the classifying, the average systematic errors being expressible by the matrix relation

$$\begin{pmatrix} v_1 \\ v_2 \\ \vdots \\ v_m \end{pmatrix} = \begin{pmatrix} p_{11}\, p_{12} \cdots p_{1n} \\ \cdots\cdots \\ p_{m1}\, p_{m2} \cdots p_{mn} \end{pmatrix} \begin{pmatrix} n_1 \\ n_2 \\ \vdots \\ n_m \end{pmatrix} \quad (1)$$

and being correctible according to the inverse matrix relation

$$\begin{pmatrix} u_1 \\ u_2 \\ \vdots \\ u_m \end{pmatrix} = \begin{pmatrix} q_{11}\, q_{12} \cdots q_{1m} \\ \cdots\cdots \\ q_{m1}\, q_{m2} \cdots q_{mn} \end{pmatrix} \begin{pmatrix} v_1 \\ v_2 \\ \vdots \\ v_m \end{pmatrix} \quad (2)$$

where the matrix with elements q_{ij} is the inverse of the matrix with elements p_{ij},

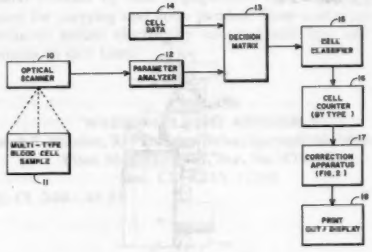
where

n_1, n_2, n_m is the actual number of objects of each type,

v_1, v_2, v_m is the machine count, and

u_1, u_2, u_m is the improved count, the improvement comprising:

count correction means connected to receive the signal count of objects by type comprising a network of scaling amplifiers and summing amplifiers, the number of summing amplifiers being equal to the number (m) of types of objects being counted, the number of matrix elements in the correction matrix being



equal to the square of the number of types of objects being counted, and the number of scaling amplifiers S_{11}, S_{12}, —, S_{1m}; S_{21}, S_{22}, —, S_{2m}; —; S_{m1}, S_{m2}, —, S_{mm} being at least equal to the number of non-zero elements of the correction matrix, said scaling amplifiers S_{11}, S_{12}, —, S_{1m} each connected to receive a signal the magnitude of which is a function of the count of one of said types, said scaling amplifiers S_{21}, S_{22}, —, S_{2m} each connected to receive a signal the magnitude of which is a function of the count of a second of said types, the remaining scaling amplifiers being connected in like manner to receive the count of other types, each of said scaling amplifiers corresponding in gain and sign to a different element of said correction matrix, the outputs of said scaling amplifiers S_{11}, S_{21}, — –, S_{m1} being connected to sum at one of said summing amplifiers, the outputs of said scaling amplifiers S_{12}, S_{22}, —, S_{m2} being connected to sum at the second summing amplifier, the remaining scaling amplifiers being connected in like manner to other summing amplifiers, whereby the outputs of said summing amplifiers provide, respectively, an improved accuracy count signal of each type of object.

3,968,352

TORQUE CONTROL SYSTEM FOR REACTION WHEEL ASSEMBLIES AND THE LIKE

Richard E. Andeen, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 17, 1974, Ser. No. 470,879

Int. Cl.² G01C *19/08*

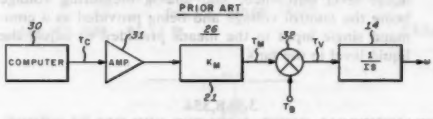
U.S. Cl. 235—150.1 **16 Claims**

1. A control torque command circuit in a reaction wheel assembly which includes a sensitive element rotating at an angular velocity, ω, for controlling the attitude of a vehicle comprising

means for computing a desired torque command signal to control the attitude of said vehicle and providing said torque command signal at an output terminal of said computing means,

means coupled to said output terminal of said computing means for integrating said torque command signal and producing an integrated torque command output signal,

sensing means for measuring the angular velocity, ω, of said sensitive element and producing an output signal proportional thereto,



combining means having a first input terminal coupled to said integrating means for receiving said integrated torque command output signal and a second input terminal coupled to said means for measuring angular velocity for producing an output error signal proportional to the difference between said integrated torque command signal and said output error signal, and

motor means coupled to said combining means for receiving said output error signal and producing a torque output which is applied to said sensitive element thereby producing a change in said angular velocity, ω, whereby the torque applied to said sensitive element is substantially equal to said commanded torque signal and is compensated for the presence of undesired disturbance torques on said assembly and anomolies in said control circuit.

3,968,353

APPARATUS FOR DETERMINING THE PHASE DIFFERENCE BETWEEN THE ROLLING OSCILLATION OF A SHIP AND A LIQUID CONTAINED IN A STABILIZING TANK

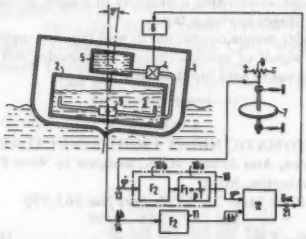
Herbert Küller, Igelsdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 31, 1974, Ser. No. 519,677

Claims priority, application Germany, Nov. 5, 1973, 2355202

Int. Cl.² G06G *7/18;* **B63B** *39/03*

U.S. Cl. 235—150.2 **10 Claims**



1. Apparatus for determining the phase difference between the roll oscillation of a ship and the oscillation of a liquid contained in a stabilizing tank wherein means are provided to obtain an output proportional to the roll rate of the ship and the measured liquid level difference in the stabilizing tank and means provided to adjust the liquid level in the tank in response to a command signal comprising:

a. first means including the series connection of an ideal integrator and a first frequency dependent member for forming a dervied roll angle, having a frequency depen-

dent phase shift relative to the true angle, from the measured roll rate;

b. second means comprising a second frequency dependent member having a frequency response corresponding to the frequency response of said first frequency dependent member for forming a derived liquid level difference from the measured liquid level difference having the same frequency dependent phase shift as the derived roll angle relative to the true roll angle;

c. means for comparing the outputs of said first and seconds means to develop an analog measuring voltage dependent on the phase difference between the roll angle and the liquid level difference, said analog measuring voltage being the control voltage and being provided as a command single input to the means provided to adjust the liquid level in the tank.

3,968,354

TRANSVERSAL DIGITAL FILTER FOR DELTA CODED SIGNALS

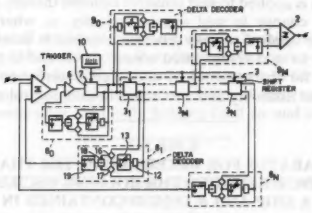
Gilbert Marie Marcel Ferrieu, Bievres, France, assignor to T.R.T. Telecommunications Radioelectriques, Paris, France

Filed July 17, 1974, Ser. No. 489,144

Claims priority, application France, July 20, 1973, 73.26734

Int. Cl.² G06F *15/34*

U.S. Cl. 235—152 **8 Claims**



1. A digital filter comprising

clock pulse generator means for generating clock pulses;

input means for receiving an input signal to be processed;

delta modulator means responsive to said clock pulses for modulating the output of said input means, and having an output;

delay means connected to the output of said delta modulator means, comprising a plurality of stages, at least some of said stages having a tap;

and decoder means connected to said taps for supplying an output signal of predetermined magnitude, and a feedback signal to said input means.

3,968,355

AUTOMATIC NIGHT LIGHT STRUCTURE

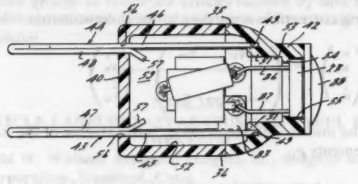
Jon Smallegan, Ann Arbor, Mich., assignor to Novo Products, Inc., Farmington, Mich.

Filed Mar. 31, 1975, Ser. No. 563,595

Int. Cl.² F21V *33/00*

U.S. Cl. 240—2 R **10 Claims**

1. A night light structure comprising a housing having a circuit portion and a lamp portion extending therefrom, said circuit portion having a first wall with a pair of outlet prongs extending therefrom and an interior compartment, said prongs extending along opposite sides of said compartment, shoulder means on the side of said compartment remote from said wall, a circuit board in said compartment, means supporting said circuit board comprising portions of said prongs supporting one end of said board, said shoulder means supporting the other end of said board, the side edges of said board being disposed between the portions of said prongs within said compartment, means on the end of said circuit portion of the housing remote from said wall supporting a light-sensitive



resistor, and conductive means leading from said light-sensitive resistor to said circuit board.

3,968,356

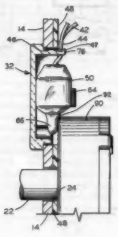
LIGHTED KNOB DIMMER

Robert L. Martin, Cranston, R.I., assignor to General Electric Company, New York, N.Y.

Filed June 14, 1974, Ser. No. 479,391

Int. Cl.² F21V *33/00*

U.S. Cl. 240—2 S **7 Claims**



1. A lighted knob dimmer comprising:

a. a dimmer having an insulating housing and a metal mounting bracket affixed to the housing for mounting the dimmer in a wall box,

b. the mounting bracket of said dimmer having located generally centrally thereof a control shaft capable of rotary motion to adjust the power level transmitted through said dimmer,

c. an opening through said mounting bracket adjacent said control shaft,

d. a light source in said opening,

e. said light source being restrained from movement through said opening by a lens member covering said bracket opening,

f. said light source being at least partially restrained from movement away from said lens member by abutment against a component element of said dimmer,

g. and said metal mounting bracket is backed by an insulating layer and wherein the opening through the mounting bracket extends also through the insulating layer.

3,968,357

ILLUMINATED EARRING WHICH IS SWITCHED ON BY SECUREMENT TO THE EAR

Eric Hamilton, Culver City, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

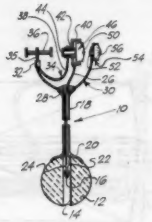
Filed Oct. 29, 1975, Ser. No. 626,828

Int. Cl.² F21V *33/00*

U.S. Cl. 240—6.4 W **3 Claims**

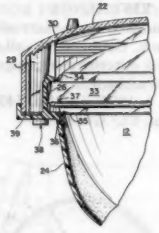
1. An illuminated earring comprising: means for engaging the ear to secure the earring thereto, said means including a resilient U-shaped earring clip having a pair of opposed legs which are urged apart upon engaging an ear therebetween; a

first electrical contact carried on one of said legs; a second electrical contact; a support secured to the earring clip carrying said second contact and maintaining it spaced opposite said first contact in a manner for said first contact to be urged toward and into contact with said second contact upon said engagement of the ear by said clip; said first and second



contacts being configured and positioned for capturing a wafer battery therebetween and for contacting opposite terminals of said battery when said first contact is urged toward said second contact by said engagement with the ear; a lamp; means for carrying said lamp pendant from said support; and conductor means electrically coupling said first and second contacts to said lamp.

3,968,358
WARNING LIGHT ASSEMBLY
Joseph E. Baader, 333 Holiday Drive, Springfield, Ohio 45505
Filed May 21, 1975, Ser. No. 579,750
Int. Cl.² F21V *17/00*
U.S. Cl. 240—41.55 **9 Claims**



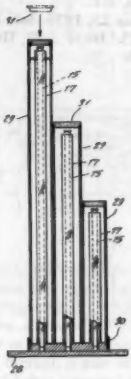
1. A signal light assembly, of particular utility as a school bus warning light, comprising in combination:

A. A one-piece housing of a resilient material further comprising a cup-shaped body having a concave inner surface terminating at a circular rim and housing rim means further including an annular housing flange surface around and in the plane of said rim, said one piece housing further including a plurality of individual integrally formed resilient tabs, each tab comprising an elongated shaft extending substantially normally from said annular flange surface and with an inwardly directed projection surface on the distal end of said elongated shaft, and;

B. a general service sealed light bulb of the type having a circumferential lamp seal defining an upper retaining flange and with a lower seating plane surface, said bulb including electrical terminals on the rear thereof, wherein said bulb is held within said housing with said seating plane in contact with said housing rim means and said upper retaining flange in contact with at least one of said resilient tab projection surfaces, and;

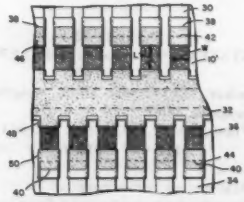
C. a lens superstructure comprising a concave inner surface terminating at an annular lens mounting surface, said lens further comprising a plurality of bosses formed extending from the periphery of said inner lens surface, wherein at least one of said bosses is a combination boss including a bulb locating surface spaced from said annular lens mounting surface, whereby when said lens mounting surface is held against said housing rim means said bulb locating surface is proximate said bulb retaining flange.

3,968,359
FLUORESCENT LAMP
Richard Shaffer, c/o George Spectro, 3615 Woolworth, Bldg., 233 Broadway, New York, N.Y. 10007
Filed June 3, 1974, Ser. No. 475,585
Int. Cl.² H05B *33/02*
U.S. Cl. 240—51.11 R **2 Claims**



1. A fluorescent lamp device comprising a base, an elongated fluorescent lamp extending into and secured to said base, and an enclosing case for said lamp, said case including a transparent vertically extending support tube surrounding said lamp and extending into and secured to said base, and a plurality of various sized translucent outer globes mounted co-axially with and extending along the vertical axis of the tube wherein the globes are in peripheral contact with the tube and supported thereby.

3,968,360
HIGH RESOLUTION PHOTOCONDUCTIVE ARRAY AND PROCESS FOR FABRICATING SAME
Milton H. Monnier, Santa Barbara, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 14, 1975, Ser. No. 567,982
Int. Cl.² H01L *31/08*
U.S. Cl. 250—211 R **8 Claims**



1. A photodetector array including photoresponsive elements defined by:

a. a film of photoconductive material deposited on both an insulating substrate and on a metallization pattern thereon, and

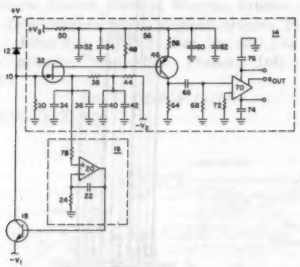
b. electroplated contacts overlying a portion of said photoconductive film atop metal regions in said pattern and separated a predetermined distance above a portion of said photoconductive film which is in direct contact with said substrate, and the spacing between said electroplated contacts defining one dimension of said photoresponsive elements.

3,968,361

LASER RECEIVER ANTI-SUN CIRCUIT

Jon H. Bumgardner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 23, 1975, Ser. No. 589,503
Int. Cl.² H03F 3/08; H04B 9/00
U.S. Cl. 250—214 R **5 Claims**



1. An electronic circuit includable within a photodetector circuit to eliminate the effects of background illumination so that detection of the illumination-of-interest is improved, comprising:

said photodetector circuit including a photodetector;

ambient illumination within the field of detection of said photodetector;

circuit means coupled to said photodetector circuit for eliminating the effects of said ambient illumination in the output of said photodetector by providing a compensating electrical current that is combined with said output of the photodetector;

wherein said photodetector circuit has first and second stages, with said first stage having the gate of a field effect transistor coupled to said photodetector, and wherein said circuit means includes an operational amplifier having negative feedback, coupled to said photodetector circuit for receiving an output from the source of said field effect transistor, and a current source means coupled to the output of said operational amplifier for controlling said compensating current in response to the output of said operational amplifier.

3,968,362

OPTICAL SYSTEM FOR LASER DOPPLER HOMODYNE DETECTION

Hans W. Mocker, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

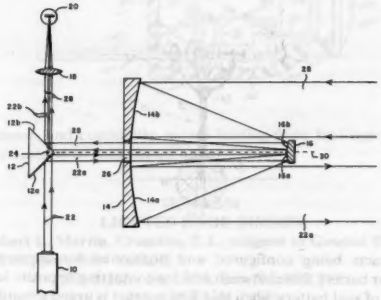
Filed Aug. 11, 1975, Ser. No. 603,569
Int. Cl.² H01J 3/14
U.S. Cl. 250—216 **38 Claims**

1. An optical system comprising:

light source means for producing a light beam;

roof reflector means having first and second reflecting surfaces, the first reflecting surface for separating the light beam into an output beam and a local oscillator beam, and the second reflecting surface for reflecting incident radiation;

transmitter means positioned to receive the output beam from the first reflecting surface, the transmitter means for expanding the beam diameter of the output beam and transmitting the output beam;



receiver means for receiving incident radiation and directing the incident radiation to the second reflecting surface; and

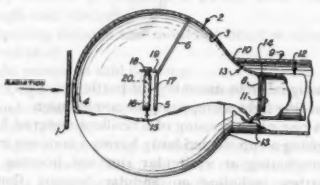
detector means positioned to receive the local oscillator beam and to receive the incident radiation from the second reflecting surface, the detector means for producing a signal indicative of the local oscillator beam and the incident radiation.

3,968,363

RADIATION FLUX AVERAGING DEVICE OF HIGH EFFICIENCY

Klaus D. Mielenz, Kensington; Radu Mavrodineanu, Rockville, and Edwin D. Cehelnik, Gaithersburg, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 547,075
Int. Cl.² G01J 1/00
U.S. Cl. 250—228 **6 Claims**



1. A radiation flux averaging device having a relatively high efficiency over ultraviolet and visible wavelengths comprising:

a hollow enclosure having an internal surface for which the diffuse reflectance over the ultraviolet portion of the spectrum is substantially less than the diffuse reflectance over the visible portion;

said enclosure having a radiation entrance opening and a radiation exit opening;

a target positioned within said enclosure facing said radiation entrance opening; and

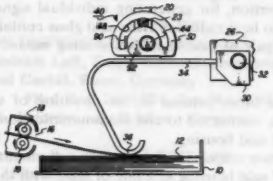
a fluorescent material disposed between said radiation entrance opening and said target for converting entering ultraviolet radiation to visible radiation, whereby entering ultraviolet and visible radiation is averaged by said device with high efficiency.

3,968,364

HEIGHT SENSING DEVICE

Eugene F. Miller, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 27, 1975, Ser. No. 608,116
Int. Cl.[2] H01J 3/14
U.S. Cl. 250—237 R 10 Claims



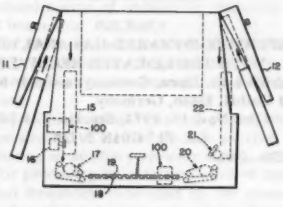
1. In a height sensing mechanism: a support, a light source and a light detector aligned with said source each fixed to said support, a sensing member pivotally mounted to said support, a beam interrupter rotatably mounted to said sensing member for rotation relative thereto, said beam interrupter having a slot therein eccentrically located about the axis of the rotational connection of said beam interrupter to said sensing member, sensing means on said sensing member, said beam interrupter being located between said light source and aid detector, and means for locking said beam interrupter in a position on said sensing member that a portion of said slot is aligned with said light source and said detector to allow a beam generated by said light source to pass therethrough at only a predetermined pivotal position of said sensing member relative to said support.

3,968,365

FILM SENSOR FOR AN X-RAY FILM LOADER

Edwin L. Sohngen, Cincinnati, Ohio, assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 29, 1975, Ser. No. 544,875
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—338 1 Claim



1. Apparatus for sensing the presence or absence of X-ray film in a supply magazine of an automatic X-ray film loader, said apparatus being comprised of:

a supply magazine having an opening;

an infrared source for emitting infrared radiation substantially outside X-ray film spectral sensitivity;

an infrared detector for producing a signal upon receipt of said infrared radiation,

said source and said detector arranged to be in infrared communication with said opening;

a mirror for reflecting through said opening said infrared radiation from said source to said detector, said source and said detector being mounted external to said magazine on one side of a film position and said mirror is arranged internal to said magazine on the other side of the film position; and

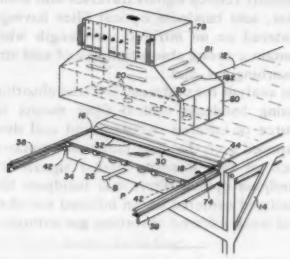
a filter for passing infrared radiation outside the spectral sensitivity of X-ray film and blocking radiation within the spectral sensitivity of X-ray film, said filter being mounted in said opening, interposed between said infrared source and the film position.

3,968,366

APPARATUS FOR SORTING TOBACCO LEAVES

Emil S. Asfour, 21 Wengirain, 8704 Herrliberg, Switzerland

Division of Ser. No. 235,169, March 16, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,518
Int. Cl.[2] H01J 5/02
U.S. Cl. 250—239 8 Claims



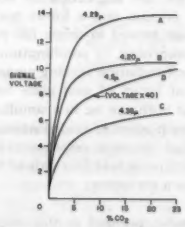
1. Apparatus for housing photosensors and lights comprising a rectangular box structure opened at its bottom and at least at one end and longitudinally divided into transverse central and outer sections, a plurality of photosensors individually removably secured in the top of said box and extending into the central section thereof, a pair of slidable trays each supporting a plurality of lights arranged longitudinally there along, means on the interior of said outer sections and said trays cooperating to slidably support and permit insertion of said trays through the open end of said respective outer sections and means for enclosing said open end and securing said trays against movement within said respective outer sections.

3,968,367

FILTER SYSTEM FOR INFRARED ANALYSIS

Richard E. Berg, Chanhassen, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 506,080, Sept. 16, 1974, abandoned, which is a continuation of Ser. No. 368,131, June 8, 1973, abandoned. This application Oct. 14, 1975, Ser. No. 621,921
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—339 2 Claims



1. In a method of analyzing a gas sample for a plurality of gases of interest each of which has a characteristic infrared absorption spectrum associated therewith, wherein the analysis for each gas of interest is derived from a comparison of intensity-related signals produced by a detector means, wherein the difference in said signals is rendered dependent upon the absorption of infrared radiation from a source by

that gas of interest; wherein at least one of said is a relatively strong absorbing gas and at least one of said gases of interest is relatively weak infrared absorbing gas and wherein the composition of said sample is such that a wide range exists in the relative values between intensity-related signals produced by said strong absorbing gas and said weak absorbing gas, the improvement comprising the step of:

reducing said wide range between said relative values between intensity-related signals produced by said strong absorbing gas and said weak absorbing gas by:

in the analysis for said strong infrared absorbing gas of interest, interposing bandpass optical filter means between said source and said detector means disposed such that radiation ultimately producing both of said intensity-related signals traverses said bandpass optical filter, said bandpass optical filter having a passband centered on an infrared wavelength which does not contain a strong absorption line of said strong infrared absorbing gas, and

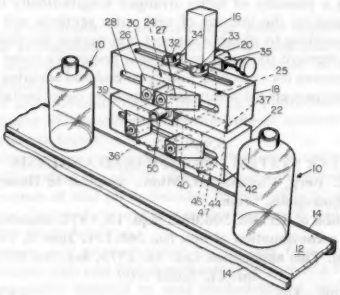
in the analysis for said weak infrared absorbing gas, interposing bandpass optical filter means between said source of infrared radiation and said detector means disposed such that said radiation ultimately producing each of said intensity-related signals traverses said bandpass optical filter, said bandpass filter having a passband centered on an infrared wavelength wherein said weak infrared absorbing gas strongly absorbs.

3,968,368

INSPECTION APPARATUS AND METHOD FOR HOT GLASS CONTAINERS

James R. Sager, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 10, 1975, Ser. No. 556,774
Int. Cl.² G01J *1/00*
U.S. Cl. 250—340 **8 Claims**



1. Apparatus for the inspection of hot glass containers having an upper portion and a lower portion, wherein said glass containers are moved in single file past said apparatus, said apparatus comprising, in combination:

a first pair of heat-radiation sensing means, located adjacent to the path of travel of said glass containers and positioned so that both can be in a simultaneous line of sight with the upper portion of said glass containers, for generating individual signals in response to heat-radiation from said glass containers said first pair of heat-radiation sensing means each including;

a housing;

an elongated tube, pointed in the direction of said glass containers, connected to and in communication with the interior of said housing;

a heat-radiation responsive lead sulfide cell mounted in the interior of said housing in a line of sight with the bore of said tube; and

electronic amplification means, connected to said lead sulfide cell, for amplifying the output signal of said lead sulfide cell;

a second pair of heat-radiation sensing means; located adjacent to the path of travel of said glass containers and positioned to have the downstream one of said second pair of heat-radiation sensing means in a line of sight with the lower portion of said glass containers while both of said first pair of heat-radiation sensing means are in a line of sight with said upper portion while the upstream one of said second pair of heat-radiation sensing means is out of the line of sight of said lower portion, for generating individual signals in response to heat radiation from said glass containers said second pair of heat-radiation sensing means each including;

a housing;

an elongated tube, pointed in the direction of said glass containers, connected to and in communication with the interior of said housing;

a heat-radiation responsive lead sulfide cell mounted in the interior of said housing in a line of sight with the bore of said tube; and

electronic amplification means, connected to said lead sulfide cell, for amplifying the output signal of said lead sulfide cell;

means for holding said first and second pairs of heat-radiation sensing means in a fixed location, said means for holding including;

a vertical support column positioned adjacent to the path of travel of said hot glass containers;

an upper probe carrier, slideably mounted on said support column, having a longitudinally extending slot formed therein extending along the path of travel of said glass containers, said first pair of heat-radiation sensing means tubes extending through said upper probe carrier slot; and

a lower probe carrier, slideably mounted on said support column, having a longitudinally extending slot formed therein extending along the path of travel of said glass containers, said second pair of heat-radiation sensing means tubes extending through said lower probe carrier slot; and

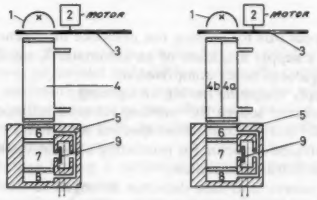
logic means, responsive to signals from said first and second heat-radiation sensing means, for generating an output signal if the signals from said first pair and second pair of heat-radiation sensing means do not occur in a preselected time related pattern.

3,968,369

NON-DISPERSIVE INFRARED GAS ANALYSIS DEVICE WITH TRIPLE LAYER RECEIVER

Karl Friedrich Luft, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Filed Nov. 15, 1974, Ser. No. 524,249
Int. Cl.² G01N *21/26*
U.S. Cl. 250—344 **5 Claims**



1. Non-dispersive infrared gas analysis device for use with a set of incoming infra-red rays, comprising

A. a radiation receiver divided into first, second, and third receiver layers arranged in series in the path of said rays,

the first and third layers being outer layers and the second layer being a middle layer, and

B. pneumatic parallel connection means for the first and the third layers, whereby a pressure difference occurs, due to radiation absorption, between the connected first and third layers at one pressure and the middle layer at another pressure, and

C. means for measuring the pressure difference.

3,968,370

NON-DISPERSIVE INFRARED GAS ANALYZER

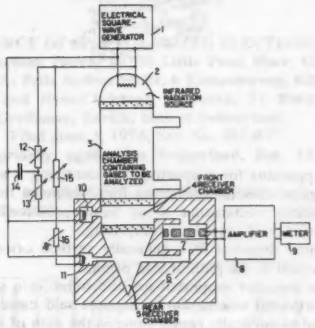
Karl Friedrich Luft, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Filed Dec. 26, 1974, Ser. No. 536,332

Claims priority, application Germany, Jan. 3, 1974, 2400221

Int. Cl.² G01J 1/00

U.S. Cl. 250—344 **8 Claims**



1. In a non-dispersing infrared gas analyzer comprising:

a. a two-layer receiver including two receiver chambers,

b. means for passing a single infrared beam having a given frequency, phase and amplitude through a test sample of gas into the two-layer receiver to produce a pressure difference in the two chambers,

c. a modulated source of voltage for operating the single infrared beam, and

d. means for generating an electrical difference signal substantially proportional to the pressure difference,

the improved means to compensate the difference signal comprising:

e. at least one electrically operated pneumatic pressure generator situated in one of the two receiver chambers for producing an auxiliary pressure signal, and

f. means for producing an electrical control signal with a phase and frequency controlled by the phase and frequency of modulated source of voltage for electrically operating the pressure generator.

3,968,371

METHOD AND APPARATUS FOR DIRECT RADON MEASUREMENT

Allen E. Greendale, Brookeville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 4, 1975, Ser. No. 610,207

Int. Cl.² G01T 7/02

U.S. Cl. 250—380 **32 Claims**

1. A direct measurement apparatus for radon comprising:

a collector device attachable to a source of radon for collecting a sample of radon;

a detector device for detecting the presence of and measuring the quantity of radon in a gaseous sample; and

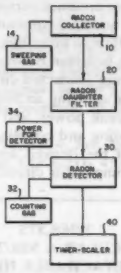
conduit means coupling said collector device and said detector device,

said collector device including:

a containment means positionable over a source of radon to contain a volume of radon;

an attachment means for supporting said containment means to a source of radon; and

transport means to carry said radon from said containment means;



and said detector device including:

a sample chamber to hold the radon-containing sample for radon detection and measurement;

a gas proportional counter to detect and register the presence of radon and

means to remove the radioactive decay by-products or daughters of radon from said proportional counter.

3,968,372

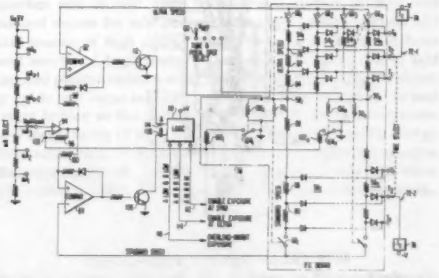
TUBE PROTECTION CIRCUIT FOR X-RAY GENERATORS

Charles Leo Laughinghouse, Linthicum, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Filed Nov. 24, 1975, Ser. No. 634,316

Int. Cl.² H05G 1/30

U.S. Cl. 250—402 **15 Claims**



1. In an X-ray tube anode protection circuit having circuit means being operated by the output of a comparator circuit which compares selected values of electrical analog voltages representative of X-ray tube rating chart curves against selected values of analog voltages corresponding to desired exposure time and anode current for preventing energization of the X-ray tube in the event the desired operating parameters exceed the rating of the X-ray tube, the improvement comprising:

a source voltage of a predetermined reference value;

a plurality of circuit means selectively coupled to said source voltage, each of said circuit means having a current-voltage characteristic adapted to simulate a predetermined rating chart curve which is a function of a plu-

rality of exposure times and providing a plurality of signals at selected circuit points corresponding to allowable peak power for said exposure times;

a time select switch for said plurality of circuit means and having a movable contact and a plurality of fixed contacts;

respective diode means coupling like exposure time circuit points of said plurality of circuit means to a common circuit junction coupled to respective fixed contacts of said plurality of fixed contacts, said diode means being identically poled to conduct current between the respective circuit points and said common circuit junction while blocking current flow to other like time circuit points and thereby providing isolation between said circuit means;

circuit means coupling a selected circuit point to said comparator circuit for applying an analog signal corresponding to allowable peak power; and

circuit means providing and coupling a signal proportional to the product of the desired anode voltage and beam current to said comparator circuit.

3,968,373

DEVICE, IN PARTICULAR A NEUTRON GENERATOR, HAVING A DETACHABLE HIGH-VOLTAGE CONNECTION

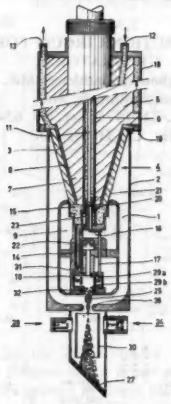
Otto Reifenschweiler, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 6, 1974, Ser. No. 503,591

Claims priority, application Netherlands, Sept. 12, 1973, 7312546

Int. Cl.² H05G *1/02*; G21G *4/02*

U.S. Cl. 250—419 **5 Claims**



1. Apparatus for making high voltage connection to and cooling an ion source, comprising an ion source having a cooling duct, a first insulator for supporting said ion source, and a detachable high voltage connection comprising a second insulator adapted to fit in spaced relation to said first insulator with a gap therebetween in communication with one end of said cooling duct of said ion source, said second insulator having a duct connecting with the other end of said cooling duct to form a conduit for continuously carrying cooling and insulating fluid through said duct of said second insulator, said cooling duct of said ion source and said gap between said first and second insulators, and a high voltage supply conductor carried by said second insulator for connection across said conduit to said ion source.

3,968,374

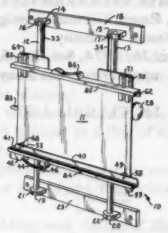
X-RAY CASSETTE HOLDER HAVING LEVER MEANS FOR POSITIONALLY ADJUSTING A CASSETTE SUPPORTING MEMBER

Charles H. Schroeder, Box 9414, 6501 Hadley, Raytown, Mo. 64133

Filed Nov. 22, 1974, Ser. No. 526,128

Int. Cl.² G11B *1/00*

U.S. Cl. 250—468 **8 Claims**



1. Apparatus for supporting and centering a substantially rectangular cassette containing film therein in the path of a substantially rectangular X-ray beam produced by X-ray equipment, said apparatus comprising:

a frame disposed in a generally vertical orientation and located in the path of said beam;

a bar member supported on said frame in a substantially horizontal orientation to support said cassette thereon and to vertically center same in the path of said beam;

lever means coupling said bar member to said frame for vertical movement between a stable upper position wherein said cassette is vertically centered in the path of the beam with its longitudinal axis oriented substantially horizontally and a stable lower position wherein said cassette is vertically centered in the path of the beam with its longitudinal axis oriented substantially vertically, said lever means also effecting horizontal movement of said bar member upon vertical movement thereof between said upper and lower positions; and

a stop member mounted rigidly on said bar member and moving laterally therewith a preselected distance in response to movement of said bar member between said upper and lower positions, said stop member being engageable with a side of said cassette to horizontally center same in the path of said beam with the longitudinal axis of said cassette oriented either horizontally or vertically.

3,968,375

X-RAY CASSETTE HOLDER

Leonard F. Peyser, Briarcliff Manor, N.Y., and Roger L. Hibbert, Bethel, Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Dec. 13, 1974, Ser. No. 532,346

Int. Cl.² G03B *41/16*

U.S. Cl. 250—468 **8 Claims**

1. A film cassette holder comprising

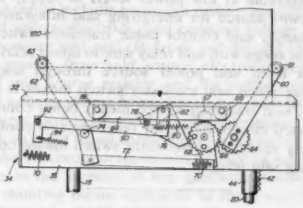
a support member;

a pair of substantially parallel, opposing guide tracks operatively disposed on the support member for insertion of a cassette therebetween;

a pair of spaced pivotal clamping arms operatively disposed with respect to the guide tracks and suitably spaced apart for closing on opposing sides of the cassette; and

cassette positioning means operatively connected to the

clamping arms for rotating the arms in respective opposite angular directions to exert substantially equal pres-



sures on opposing sides of the cassette and thus position it transversely in the holder.

3,968,376

SOURCE OF SPIN POLARIZED ELECTRONS

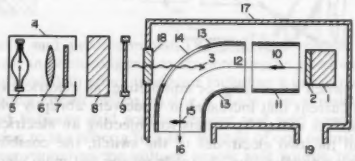
Daniel Thornton Pierce, 10120 Little Pond Place, Gaithersburg, Md.; Felix Andrea Meier, 6 Kastanienweg, Kilchberg, Zurich, and Hans-Christoph Siegmann, 21 Burstwiesenstrasse, Greifensee, Zurich, both of Switzerland

Filed June 3, 1975, Ser. No. 581,837

Claims priority, application Switzerland, Jan. 13, 1975, 597/75

Int. Cl.² G21G *4/00*; H01J *39/00*

U.S. Cl. 250—493 **9 Claims**



1. A source of spin polarized electrons comprising in combination a semiconductor photocathode, said semiconductor having a spin orbit split valence band and a lowered vacuum level, and a source of circularly polarized light, said light irradiating said photocathode to achieve photoemission of the electrons.

3,968,377

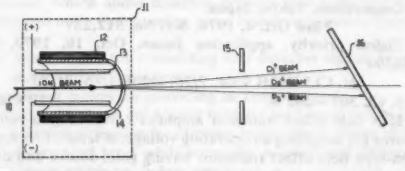
BEAM SPLITTING TO IMPROVE TARGET LIFE IN NEUTRON GENERATORS

Joseph Paul Farrell, East Setauket, N.Y., assignor to Radiation Dynamics, Inc., Westbury, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,486

Int. Cl.² G21G *4/02*

U.S. Cl. 250—499 **11 Claims**



1. Apparatus for generating neutrons with a source beam containing atomic and diatomic molecular deuterium ions, said apparatus being characterized by:

a target including material which emits neutrons when bombarded with atomic and diatomic molecular deuterium ions;

means for separating said source beam into a first beam containing substantially only atomic deuterium ions and a second beam containing substantially only diatomic deuterium ions; and

means for directing said first and second beams onto said target such that each beam strikes said target at a different location.

3,968,378

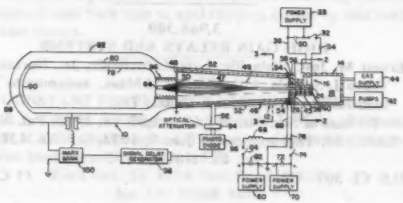
ELECTRON BEAM DRIVEN NEUTRON GENERATOR

Thomas G. Roberts; Romas A. Shatas, and John D. Stettler, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 11, 1974, Ser. No. 487,841

Int. Cl.² G21G *4/02*

U.S. Cl. 250—502 **6 Claims**



1. An electron beam driven neutron generator comprising a target holder, a target of deuterium-tritium mounted in said target holder, coil means positioned about said target forming a magnetic field about said target holder and being of such a structure as to cause confinement of energy radially from said target so that heat conduction in said target is one-dimensional, a tapered beam forming and guiding section in the form of a linear pinch tube for producing a tapered plasma column and mounted relative to said target holder at one end, a source of high energy electrons from a machine mounted at another end of said beam forming and guiding section, and control means for said beam forming and guiding section and said source of high energy electrons to cause electrons from said source of high energy electrons to be injected into said tapered plasma column and cause said tapered plasma column to guide and focus said electrons in the form of a beam to said target holder as the plasma in said plasma column contracts, said target being of such a length and diameter that the energy from said source of high energy electrons is absorbed to cause the temperature of said target to be raised to a very high value and cause neutrons to be produced for tens of nanoseconds.

3,968,379

PHOTOCELL SMOKE DETECTOR

Burke J. Crane, Lombard, Ill., assignor to Rixson-Firemark, Inc., Franklin Park, Ill.

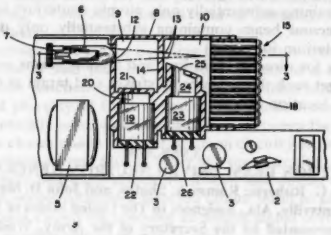
Filed Nov. 29, 1974, Ser. No. 528,010

Int. Cl.² G01N *21/26*

U.S. Cl. 250—574 **5 Claims**

1. A photocell smoke detector comprising a smoke detector housing defining in part a dual section smoke chamber having a first smoke sensing chamber and a second compensating chamber, with a smoke sensing photocell coupled to the smoke sensing chamber and a compensating photocell coupled to the second chamber, a light source coupled to the compensating chamber and transmitting a beam of light generally parallel and away from the photosensitive surfaces of the two photocells, a dividing wall containing a relatively small light transmitting aperture dividing the smoke sensing and the

compensating chambers, and a light trap also defining part of the smoke sensing chamber fabricated of a plurality of layers of corrugated media sandwiched between relatively flat parallel liners whereby light is absorbed in the flutes of the corrugated media and smoke is enabled to pass freely into and out of the smoke sensing chamber while being restricted from entry into the compensating chamber by the dividing wall.



3,968,380

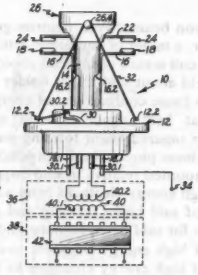
HIGH GAIN RELAYS AND SYSTEMS

Ernest M. Jost, Plainville; Lyle E. McBride, Jr., Norton, and Teuvo J. Santala, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 351,683, April 16, 1973, Pat. No. 3,893,055. This application Jan. 7, 1974, Ser. No. 431,539

Int. Cl.[2] H01H *47/02*

U.S. Cl. 307—99 **11 Claims**



1. A relay system comprising a relay operable at the low power levels used in energizing integrated circuits having an insulating base, stationary contact means mounted on said base, movable contact means mounted on said base for movement between a closed circuit position engaging said stationary contact means and an open circuit position spaced from said stationary contact means, spring means mounted on said base biasing said movable contact means from one of said positions to the other of said positions, and a metal wire secured between said movable contact means and said base, said wire being of a selected nickel-titanium alloy to be deformed from an original length to a second length by said spring bias as said movable contact means is moved from said one position to said other position by said spring bias while said alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said movable contact means back to said one position against said spring bias with a force of at least about 15 grams when said wire is heated to said transition temperature, said wire having a selected cross-sectional size corresponding to a diameter of less than about 0.004 inches and a selected length to be heated from room temperature to said transition temperature by passing electrical current through said wire with a power input of less than about 2 watts for permitting operation of said relay with a gain of at least about 500 to 1 at power levels used in energizing integrated circuits; integrated circuit means energizable at low power levels to supply a control pulse; a power source for energizing said integrated circuit means to supply said control pulse; transistor switch means connected in series with said relay wire to direct relay energizing current from said power source through said nickel-titanium wire when said transistor switch means is rendered conductive, said transistor switch means being connected to said integrated circuit means for receiving said control pulse to selectively render said transistor switch means conductive for operating said relay.

3,968,381

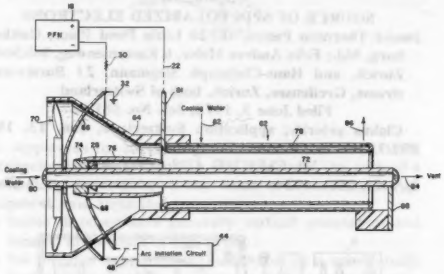
ARC TYPE SWITCH

Arthur K. Wickson, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 25, 1974, Ser. No. 526,670

Int. Cl.[2] H02H *7/22;* **H01H** *33/00*

U.S. Cl. 307—137 **20 Claims**



1. A switch for closing, or completing, an electrical circuit to pass current that increases in value very abruptly wherein the switch is closed by means for injecting an electrical arc between the two electrodes of the switch, the combination comprising accelerating electrode means and main electrode means, means to mount said accelerating electrode means in tandem before said main electrode means, arc initiation means at one end of said accelerating electrode means for starting an arc at said one end and to permit motion of said arc towards the opposite end of said accelerating electrode means, and means to introduce electrical energy pulses to said main electrode means at the end thereof in closely spaced tandem relationship to said opposite end of said accelerating means, whereby a shot of plasma is produced at said one end of said main electrode means and on said moving arc from said accelerating means to thereby sweep said plasma over said main electrode means and to avoid any dwell of said plasma on said main electrode means.

3,968,382

PROTECTIVE CIRCUIT FOR FIELD EFFECT TRANSISTOR AMPLIFIER

Katsuaki Tsurushima, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 4, 1974, Ser. No. 512,257

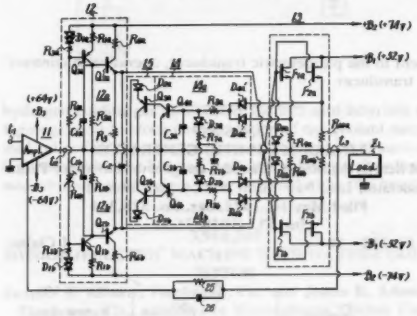
Claims priority, application Japan, Oct. 16, 1973, 48-120204

Int. Cl.[2] H02H *9/04, 7/20;* **H03F** *3/16, 3/185*

U.S. Cl. 307—202 R **10 Claims**

1. A field effect transistor amplifier comprising: a voltage source for supplying an operating voltage; at least a first depletion-type field effect transistor having gate, source and drain electrodes; means for applying said operating voltage across said drain and source electrodes through a load; input circuit means for applying an input signal to be amplified to said gate electrode of the field effect transistor; biasing circuit means

for applying a predetermined DC gate bias voltage between said gate and source electrodes; protective circuit means for preventing damage to said field effect transistor by an excessive input signal including a source resistor connected in series with said source electrode, and constant voltage means connected between said gate electrode and the side of said source resistor remote from said source electrode, the resistance value of said source resistor and the voltage value of said constant voltage means being selected so that the maximum drain-source current of said field effect transistor, when operated with an input signal applied to its gate electrode, does not exceed the maximum drain-source current of said field effect transistor in the absence of any gate-source voltage applied thereto, shunting means operative to shunt said input signal directly to said load while said field effect transistor continues



to have said predetermined DC gate bias voltage applied thereto; and detecting means for detecting an overload condition of said field effect transistor including a capacitor, a first rectifying circuit means having a diode and a resistor connected between said source resistor and said capacitor for applying to the latter a first DC voltage of one polarity which is proportional to the voltage across said source resistor, a second rectifying circuit means having a diode and a resistor connected between said capacitor and the load for applying to said capacitor a second DC voltage of the opposite polarity which is proportional to the voltage across said load so that the DC voltage across said capacitor is proportional to the impedance of said load, and means responsive to said DC voltage across the capacitor for operating said shunting means when said DC voltage across the capacitor is indicative of a predetermined low value of the load impedance.

3,968,383

NOISE LIMITER

John F. Smith, Warminster, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed July 10, 1974, Ser. No. 486,968
Int. Cl.² H03K *5/08*
U.S. Cl. 307—237 **4 Claims**

1. In a radio receiver having an AGC circuit and an audio detector, which audio detector delivers signals having both audio and noise components, noise limiter apparatus comprising:

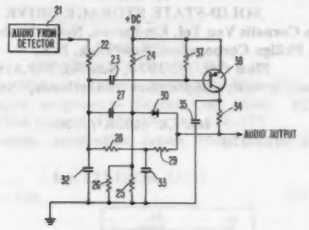
a. input means for connecting said detector signals to said noise limiter apparatus;

b. output means for providing an output signal;

c. clipping means connected between said input means and said output means for clipping input signals above a predetermined level while normally passing said delivered signals which are below said level;

d. differentiating means connected to said input means for differentiating said input signal so as to block transmission of said audio component and to detect presence of said noise component;

e. back bias means for connecting a back bias to said clipping means, said back bias means having an input connected to the output of said differentiating means and controlled by the differentiating means signal; and



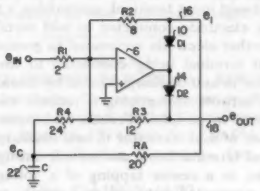
f. holding means for holding said back bias on said clipping means for a predetermined time period following connection of said back bias to said clipping means by said back bias means.

3,968,384

CONSTANT PERCENTAGE CLIPPING CIRCUIT

Robert J. Tracey, San Mateo, and Ronald J. Violet, Belmont, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 21, 1974, Ser. No. 516,835
Int. Cl.² H03K *5/08*
U.S. Cl. 307—237 **3 Claims**



1. A circuit for clipping an alternating current waveform so that the same percentage of the waveform is clipped regardless of the input amplitude of the waveform, which comprises:

input means;

an operational amplifier having its inverting input connected to the input means and its noninverting input connected to a common reference point;

nonlinear feedback means connected between the output of said operational amplifier and its inverting input, said feedback means comprising:

unilateral conducting means having a plurality of terminals, a first terminal thereof being connected to the output of said operational amplifier; and

resistance means having a plurality of terminals, a first terminal thereof being connected to the inverting input of the operational amplifier and a second terminal thereof being connected to a second terminal of said unilateral conducting means;

and floating bias means connected to said input means and said feedback means, said bias means comprising:

a capacitor having one terminal connected to the common reference point;

a first resistor having one terminal connected to the other terminal of said capacitor and the other resistor terminal connected to a junction of the unilateral conducting means and resistance means of said feedback means; and

a second resistor having one terminal connected to the other terminal of the capacitor and having the other second resistor terminal connected to the inverting input of said operational amplifier.

3,968,385

SOLID-STATE STORAGE DRIVE

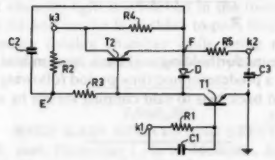
Willem Cornelis Van Tol, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,619

Claims priority, application Netherlands, Nov. 7, 1973, 7315229

Int. Cl.² H03K 17/00

U.S. Cl. 307—270 4 Claims



1. A drive unit comprising

an input terminal;

a capacitively loaded output terminal;

a charging transistor connected between said supply terminal and said output terminal, said output terminal being connected through a rectifying member to said input terminal;

a discharge circuit connected between said rectifying member and said input terminal, comprising a transistor having one electrode connected to said rectifying member, and another electrode connected to ground;

said input terminal being connected to the base of said transistor in said discharge circuit by means of a differentiating network comprising a resistor and a capacitor connected in parallel between said input terminal and said base of said transistor in said discharge circuit;

said output terminal being connected, through a capacitive member, to a center tapping of a voltage distribution circuit connected between said supply terminal and a control electrode of said charging transistor so that when said charging transistor is conductive, an additional control voltage is applied to said control electrode.

3,968,386

ARRANGEMENT FOR ACTUATING DOT-PRODUCING PRINTING ELEMENTS OF A MOSAIC PRINTING HEAD

Joachim Heinzl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

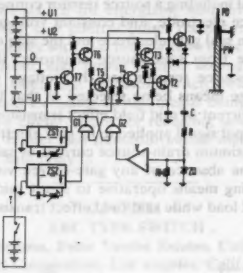
Filed Aug. 5, 1974, Ser. No. 494,707

Claims priority, application Germany, Aug. 31, 1973, 2344065

Int. Cl.² H01L 41/08

U.S. Cl. 310—8.1 6 Claims

1. An arrangement for actuating dot-producing printing elements in a mosaic printing head utilizing piezoelectric transducers which may be set in either an elongated or a contracted state by the application of suitable electric fields over electrical circuit means, and by means of which the print producing printing elements on the transition from the contracted state into the elongated state are accelerated whereby, as a result of their own mass inertia, move towards the printing position, and are returned from the printing position, by rebound and spring resetting energy, into their initial position, comprising an actuating circuit for each piezoelectric transducer, which has controlled circuit elements operative to effect an elongation of the cooperable piezoelectric transducer, and circuit elements which are controlled, in dependence upon the return of the operated dot-producing printing



element to the piezoelectric transducer, operative to contract such transducer.

3,968,387

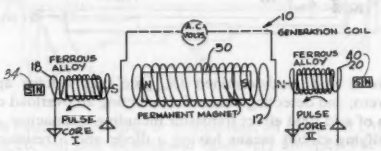
LINEAR MAGNETIC GENERATOR

David Scarff, Agincourt, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 16, 1975, Ser. No. 578,214

Int. Cl.² H02K 35/02

U.S. Cl. 310—16 4 Claims



1. A generator which includes a generating coil having a generally cylindrical form and which includes an axial bore therethrough, said generating coil having a pulse core winding in coaxial relationship disposed at each axial extremity thereof, a permanent magnet carried for axial movement within said generating coil, and permanent stationary magnets carried proximate to each pulse core windings.

3,968,388

ELECTRIC MACHINES, PARTICULARLY TURBOGENERATORS, HAVING LIQUID COOLED ROTORS

Dietrich Lambrecht, and Erich Weghaupt, both of Mulheim, Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Continuation of Ser. No. 366,769, June 4, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,421

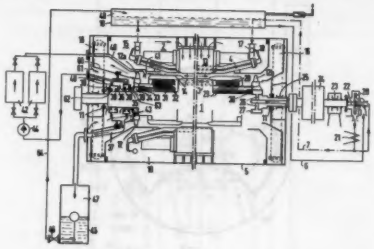
Claims priority, application Germany, June 14, 1972, 2228993

Int. Cl.² H02K 9/00

U.S. Cl. 310—53 8 Claims

1. In an electrical machine having a housing, a shaft extending through the housing, a rotor mounted on the shaft within the housing, electrical conductors disposed within the housing, electric generating means mounted on the shaft externally to and to one side of the housing, and a coolant water distribution chamber located on the shaft at the one side of the housing, a coolant water receiving chamber surrounding the rotor, means for conducting coolant water in heat transfer relationship with the electrical conductors in the housing from the coolant water distribution chamber to the coolant water receiving chamber, axially extending channel means at the surface of the shaft connecting said coolant water receiving

chamber to a collecting chamber located adjacent thereto, contact-free sealing means comprising labyrinth sealing rings sealing said collecting chamber from surrounding space within said housing, means for supplying hydrogen as cooling gas to the housing, and blower means for moving a flow of said



hydrogen cooling gas as a barrier gas into said labyrinth sealing rings so as to block contamination of the coolant water in said collecting chamber by ambient oxygen in said surrounding space within the housing, both said collecting chamber and said labyrinth sealing rings being disposed within the housing.

3,968,389

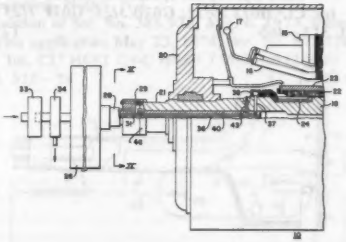
DYNAMOELECTRIC MACHINE WITH WATER-COOLED ROTOR

Jacques E. Albaric, Pittsburgh, Pa., and James E. Adamson, Plantation, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1974, Ser. No. 479,070

Int. Cl.² H02K *1/32*

U.S. Cl. 310—61 **7 Claims**



1. An electric generating unit comprising:

a main generator and an exciter therefor having axially aligned shafts, each of said shafts having a central bore extending axially therethrough:

at least one tube disposed in each shaft bore for passage of a coolant liquid, two insulated conductors disposed in each bore, the tubes and conductors of the generator shaft and of the exciter shaft being axially aligned, said tubes terminating in abutting radial flanges adjacent the abutting ends of the shafts;

means for sealing disposed between said flanges;

clamping means external to said flanges for clamping said radial flanges together to form a liquid-tight seal, said clamping means having surfaces engaging at least one of said radial flanges, actuation of said flanges applying an axial force to said flanges to clamp them together;

means for making electrical connections between corresponding conductors of the generator and exciter shafts;

coupling means for mechanically coupling together the generator and exciter shafts, said coupling means enclosing said clamping means and said electrical connections, said coupling means having openings therein; and,

means for actuating said clamping means, said actuating means being operable in cooperative association with said openings in said coupling means to engage said clamping means for actuation thereof from outside said coupling means.

3,968,390

SYNCHRONOUS MOTOR

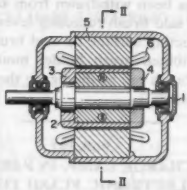
Izuru Yasuda; Hironori Okuda, and Kunio Miyashita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 5, 1974, Ser. No. 448,277

Claims priority, application Japan, Mar. 19, 1973, 48-31004

Int. Cl.² H02K *21/14*

U.S. Cl. 310—156 **9 Claims**



1. A synchronous motor comprising a rotor including magnetic pole means composed of permanent magnet means fixedly mounted around a rotor shaft, and a stator facing the outer periphery of said rotor with an air gap therebetween, a guard ring made of a non-magnetic, conductive material having low resistivity of $10^{-6}(\Omega - m)$ or more and fitly disposed on the outer periphery of said permanent magnet means.

3,968,391

BRUSH HOLDER FOR ELECTRICAL APPARATUS

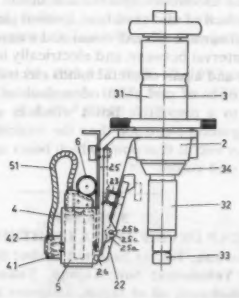
Karl Blank, Mannheim, Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 30, 1974, Ser. No. 510,596

Claims priority, application Germany, Oct. 8, 1973, 2350456

Int. Cl.² H02K *13/00*

U.S. Cl. 310—240 **13 Claims**



1. A removable brush holder structure for use in conjunction with a dynamoelectric machine in which electrical contact is established between the brush and the surface of a collector ring or commutator component on the rotor of the machine for current transfer therebetween comprising an electrically conductive support member having at least one depending leg portion directed towards the rotor, at least one open bottom brush box secured to the outer side of said leg

portion, a brush located in said brush box, an electrical connection from a wire lead on said brush to said leg portion, spring means engageable with the upper end of said brush for loading the lower end of said brush into contact with the collector ring or commutator, a brush retaining lever pivotally mounted intermediate the ends thereof at the inner side of said leg portion, spring loading means for said lever, said electrically conductive support member including a bore for receiving and securing at least one combined brush holder mounting and plug-in device insertable into a bore provided in a stationary brush holder rail mounted on the machine and extending axially of the machine, and means for releasably locking said combined brush holder mounting and plug-in device when inserted into place in said brush rail, said spring loading means for said brush retaining lever serving to force the lower end of said lever into engagement with the side of said brush to maintain the position of the brush within the brush box when said combined brush holder mounting and plug-in device has been withdrawn from said brush rail, and the upper end of said brush retaining lever being engageable with a lever deflecting surface on said brush rail upon insertion of said combined brush holder mounting and plug-in device into said brush rail to disengage the lower end of said lever from said brush.

3,968,392

PULSE DISCHARGE LAMP, IN PARTICULAR AN ELECTRONIC FLASH TUBE

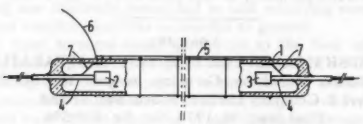
Hans Peter Buchta, Bremthal, and Josef Zimlich, Taunusstein, both of Germany, assignors to Heimann GmbH, Germany

Filed Oct. 29, 1974, Ser. No. 518,725

Claims priority, application Germany, Dec. 21, 1973, 2364016

Int. Cl.² H01J *65/00*

U.S. Cl. 313—198 **4 Claims**



1. A pulse discharge lamp comprising: a gas filled substantially cylindrical discharge vessel; a pair of electrically conducting pins extending through respective ends of said vessel; a pair of electrodes mounted on respective ones of said pins, each of said electrodes spaced a uniform interval from the internal surface of said vessel; an ignition electrode carried on the external surface of said vessel and extending substantially along the interval between and electrically insulated from said electrodes; and a pair of metal bands electrically connected to respective ones of said electrodes, each of said metal bands extending to a respective point which is a shorter distance from said ignition electrode than the respective electrode and including an end at that point which bears against the internal surface of said vessel.

3,968,393

SPARK GAP DEVICE FOR A LIGHTNING ARRESTOR

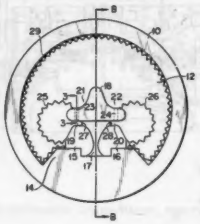
Minoru Murano, Tokyo; Satoru Yanabu; Susumu Nishiwaki, both of Yokohama; Soji Kojima, Yokosuka, and Teiichi Ueki, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 27, 1975, Ser. No. 562,770

Int. Cl.² H01J *17/00, 21/00*

U.S. Cl. 313—325 **12 Claims**

1. A spark gap device for a lightning arrestor comprising an arc extinguishing chamber defined by arc extinguishing plates; a pair of main electrodes disposed within said arc extinguishing chamber to form a spark starting gap between facing surface portions thereof; an auxiliary electrode having a first surface facing said pair of main electrodes and a pair of second surface portions opposite to said first surface, said first surface forming a pair of reigniting spark gaps with respect to said main electrodes respectively at a first space portion between said first surface and said main electrodes, and said second surface portions each serving as a temporary arc foot point of an arc extended between said second surface portion



and one of said main electrodes; said pair of second surface portions defining respective second space portions adjacent to said second surface portions and remote from said first space portion, and heated gas passing means for conducting heated gas between said second space portions and said first space portion and for causing reigniting sparks at said reigniting spark gap when the amount of each expanded arc current exceeds a predetermined value.

3,968,394

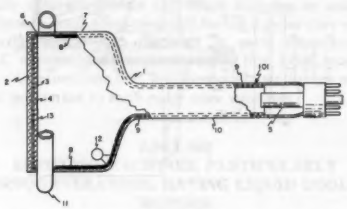
CATHODE RAY TUBE EMPLOYING FACEPLATE-DEPOSITED CATHODOCHROMIC MATERIAL AND ELECTRON BEAM ERASE

Lee T. Todd, Jr., Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 1, 1974, Ser. No. 457,111

Int. Cl.² H01J *29/12*; G02B *5/23*; G02F *1/23*

U.S. Cl. 313—465 **12 Claims**



1. For use in a cathode ray tube, an image screen that comprises a thermal buffer layer of unsensitized particles upon a substrate and a layer of sensitized cathodochromic sodalite supported by the buffer layer and thermally insulated from the substrate by the buffer layer.

3,968,395

TWO FILAMENT ELECTRIC BULB TRAFFIC LIGHT

Anton Obermaier, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 397,882, Sept. 17, 1973, abandoned. This application Mar. 28, 1975, Ser. No. 563,060

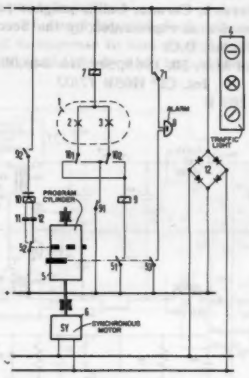
Claims priority, application Germany, Sept. 25, 1972, 2246914

Int. Cl.² H01J *7/44*; B60Q *9/00*

U.S. Cl. 315—65 **3 Claims**

1. A traffic control arrangement for a traffic light, comprising: a halogen electric lamp, said halogen electric lamp including two filaments which are subject to the tungsten-halogen

cyclic process; and control means connected to each of said filaments and operable to periodically and alternately energize said filaments for approximately equal periods of time which are within the interval within which the tungsten halogen



process does not become effective, said control means including detecting means connected to said filaments to detect filament failure and means connected to said detecting means and to said filaments for operating the lamp on one filament in response to detection of failure of the other filament.

3,968,396

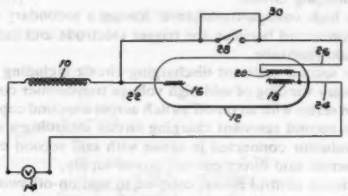
SELF BALLASTED LAMP INCLUDING A FUSEABLE DEVICE

James P. Clune, Danvers, and Robyn N. Frost, Lynn, both of Mass., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 385,923, Aug. 6, 1973, abandoned. This application May 23, 1974, Ser. No. 472,576

Int. Cl.² H01J 7/44; H05B 37/00; H01J 9/46

U.S. Cl. 315—74 **15 Claims**



1. A self ballasted lamp, comprising:
an arc tube of the type having a pair of electrodes and a starting coil;
a filament coil connected in series with said arc tube, said filament coil forming a ballast for the arc tube;
a temperature responsive switch connecting the starting coil in series with the filament coil at temperatures below a predetermined level; and
a fuseable conducting element connected across the temperature responsive switch, wherein said fuseable element provides a series connection between the filament coil and the starting coil until the element is melted and separated by the application of a predetermined voltage to said lamp.

11. A method for processing a self-ballasted lamp of the type having an arc discharge tube and a resistive filament mounted within the lamp envelope and including a temperature responsive switch in series with said resistive filament comprising the steps of:
a. connecting a fusible conducting element across said temperature responsive switch for providing a series connection between said filament coil during lamp processing; and
b. causing said fusible conducting element to melt by the application of a sufficient voltage to said filament coil.

3,968,397

FIRING APPARATUS FOR A PLURALITY OF ELECTRIC VALVES

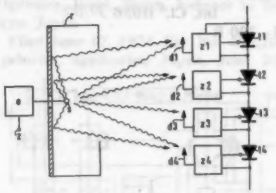
Stefan Frese, Vienna, and Franz Mayerhofer, Modling, both of Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 5, 1974, Ser. No. 529,722

Claims priority, application Germany, Dec. 5, 1973, 2360653

Int. Cl.² H05B 37/02; E04G 17/06

U.S. Cl. 315—155 **11 Claims**



1. An apparatus for the simultaneous firing of a plurality of controllable semi-conductor rectifiers in a current rectifier for high voltages including a transmitter for electromagnetic radiation having radiating means and a reflector and a detector for each of the plurality of semi-conductor rectifiers, the individual detectors coupled to the firing circuits of their associated semi-conductor rectifiers, the improvement comprising:
a. a reflector in the form of an elliptical partial cylinder;
b. the radiator positioned at the first focus line of the elipse of said elliptical cylinder; and
c. the plurality of detectors positioned at the second focus line of said elipse.

3,968,398

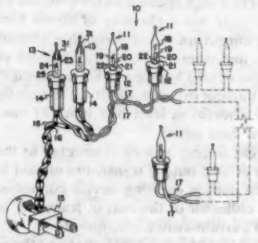
FUSED DECORATIVE STRING SET

Louis E. Lehmann, Geneva, and Ralph J. Luft, Aurora, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 397,957, Sept. 17, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,402

Int. Cl.² H05B 37/03

U.S. Cl. 315—185 S **8 Claims**



1. A string set of series-connected incandescent lamps comprising:

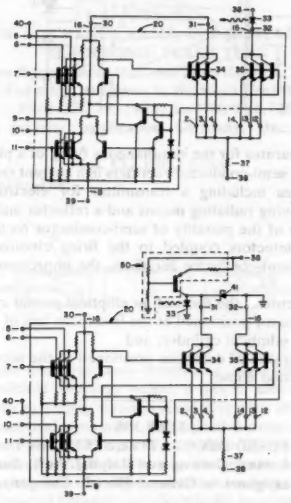
a plurality of lamps in a plurality of lamp sockets;
first conductor means interconnecting said sockets to form a string of series-connected sockets between two end sockets;
second conductor means connecting said end sockets to a plug;
said second conductor means having higher current capacity than said first condutor means; and
the lamps in at least the end sockets are the unshunted type and the remainder of said plurality of lamps are shunted lamps, whereby excessive current causes at least one of said unshunted end lamps to open-circuit to prevent overheating in the circuit formed with said first conductor means.

3,968,399

METHOD FOR DRIVING A LED AT HIGH SPEED

Bobby R. Jarrett, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,944
Int. Cl.² H05B *37/00*
U.S. Cl. 315—200 R **9 Claims**



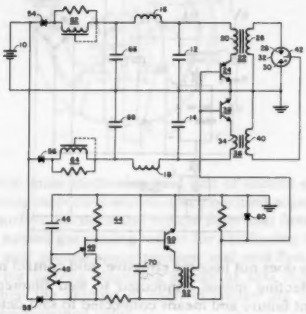
1. A circuit for driving a diode photon emitting device at frequencies up to 200 MHz comprising:
at least two high speed emitter-coupled-logic gates, wherein each gate has a plurality of inputs connected to at least one output transistor through a plurality of logic transistors, and wherein the emitter outputs of said output transistors of said logic gates are all wired together to provide full current drive capability of the multiple gate structure, and wherein at least one input of one gate receives the input data signal;
a current setting resistor connected to the wire-ORed emitters of said output transistors of said logic gates;
a diode photon emitting device connected at its cathode to the collector of the output transistor of at least one gate in a current-switch configuration;
means for applying a bias voltage to the anode of said diode photon emitting device; and
means for applying operating voltages to said logic gates whereby application of a high speed signal to an input of at least one of said logic gates, will drive said diode photon emitting device at high speed.

3,968,400

FLASH TUBE MODULATOR

Wayne C. Weinreich, Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1965, Ser. No. 444,092
Int. Cl.² H05B *37/02*
U.S. Cl. 315—209 R **6 Claims**



1. A flashtube modulator circuit comprising:
a. a flashtube having an anode, cathode and trigger electrode,
b. a current transformer having a secondary winding coupled across said anode and cathode of said flash tube and having a primary winding,
c. a first resonant discharging circuit including an on-off switch connected in series with said high current transformer primary winding across a first capacitor,
d. a first resonant charging circuit including a charging inductor connected in series with said first capacitor,
e. a source of direct current coupled across said resonant charging circuit,
f. a high voltage transformer having a secondary winding connected between the trigger electrode and cathode of said flashtube,
g. a second resonant discharging circuit including the primary winding of said high voltage transformer connected in series with an on-off switch across a second capacitor,
h. a second resonant charging circuit including a charging inductor connected in series with said second capacitor across said direct current power supply,
i. circuit control means coupled to said on-off switches for simultaneously discharging said capacitors through said transformer primary windings when said capacitors are charged to a maximum voltage,
j. whereby through successive resonant charging and discharging of said first and second capacitors the peak voltage developed across each of said primary windings is at least twelve times the amplitude of said input voltage.

3,968,401

APPARATUS FOR CONTROLLING THE INTENSITY OF A LIGHT SOURCE

Doyle D. Bryant, Granada Hills, Calif., assignor to Strand Century Incorporated, Elmwood Park, N.J.

Filed Nov. 27, 1974, Ser. No. 527,923
Int. Cl.² H05B *41/392*
U.S. Cl. 315—293 **11 Claims**

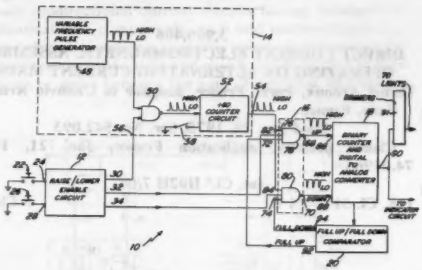
1. Apparatus for generating a control signal for controlling the intensity of a light source, comprising:

an enabling circuit for selectively generating first, second and third enabling signals;

pulse generator means electrically connected to said enabling circuit for generating a train of clock pulses in response to said first enabling signal;

up/down counter means having an up input terminal and a down input terminal;

gating means for applying said clock pulses to said up input terminal in response to said second enabling signal and for applying said clock pulses to said down input terminal



in response to said third enabling signal, said gating means electrically connected to said pulse generator means and said enabling circuit;

said up/down counter means for evaluating the difference between the number of said clock pulses applied to said up input terminal and the number of said clock pulses applied to said down input terminal and for generating a digital signal representing said evaluation;

digital to analog converter means for converting said digital signal to an analog control signal.

3,968,402

RASTER DISTORTION CORRECTING CIRCUIT

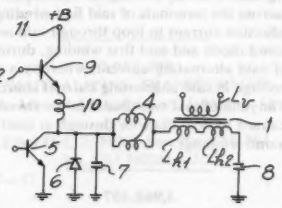
Hiroshi Sahara, Tokyo, and Tooru Kumagai, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1974, Ser. No. 499,974

Claims priority, application Japan, Aug. 25, 1973, 48-99975[U]

Int. Cl.² H01J 29/56

U.S. Cl. 315—370 **7 Claims**



1. A raster distortion correcting circuit for a television receiver including a cathode ray tube in which at least one electron beam is directed against a screen, a deflection yoke associated with said tube and having horizontal and vertical deflection windings, and horizontal and vertical deflection circuits for supplying horizontal and vertical deflection currents to said horizontal and vertical deflection windings, respectively, so that the resulting magnetic fields cause each said beam to scan horizontally and vertically for forming a raster on the screen: said raster distortion correcting circuit comprising a power supply source for supplying a power supply voltage to said horizontal deflection circuit; an active element having first and second electrodes and a control electrode for varying the effective resistance between said first and second electrodes in dependence on a control signal applied to said control electrode; a saturable reactor having input and output windings, means for generating a correction signal at the vertical scanning rate of said vertical deflection current; circuit means for connecting said first and second electrodes of the active element between said power supply source and said horizontal deflection circuit to connect said active element, said horizontal deflection winding of the yoke and said output winding of the saturable reactor in a series circuit connected to said power supply source; and circuit means for applying said correction signal to said control electrode of the active element as the control signal for the latter and to said input winding of said saturable reactor so that said active element and saturable reactor combine to correct a distortion of said raster over all portions of the latter.

3,968,403

CIRCUIT FOR CORRECTING DEFLECTION DISTORTION

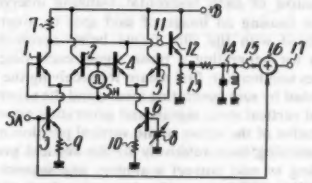
Yoshiaki Ogawara, Inagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 17, 1974, Ser. No. 480,204

Claims priority, application Japan, June 25, 1973, 48-75198[U]

Int. Cl.² H01J 29/56

U.S. Cl. 315—371 **10 Claims**



1. A circuit for correcting deflection distortion in the image displayed on the screen of a cathode ray tube, comprising:

first and second transistors interconnected at their controlled electrodes, respectively,

a third transistor connected at its output electrode to a connection point of the controlled electrodes of said first and second transistors,

fourth and fifth transistors interconnected at their controlled electrodes, respectively,

a sixth transistor connected at its output electrode to a connection point of the controlled electrodes of said fourth and fifth transistors,

a common load means connected to output electrodes of said first and fourth transistors,

a variable DC supply means coupled to said sixth transistor,

means for supplying a saw-tooth signal having a frequency equal to the vertical deflection frequency to said third transistor at its control electrode; and

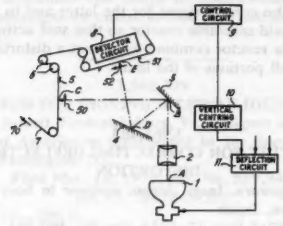
means for differentially supplying a switching signal having a frequency equal to the horizontal deflection frequency to said first and fifth transistors and to said second and fourth transistors to differentially switch said first and fifth transistors and said second and fourth transistors at said horizontal deflection frequency so as to derive from said load means a saw-tooth signal modulated by said switching signal for effecting a vertical pincushion distortion correction.

3,968,404

ARRANGEMENT FOR CONTROLLING THE VERTICAL DEFLECTION OF A FLYING SPOT TUBE

Serge Vidal, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 20, 1974, Ser. No. 481,405
Claims priority, application France, June 26, 1973, 73.23298
Int. Cl.² H01J 29/54
U.S. Cl. 315—398 3 Claims



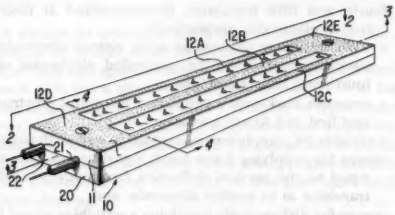
1. An arrangement for controlling the vertical deflection of a flying spot tube having a vertical deflection device, in order to effect correct vertical scanning, in a fixed gate, of the frames of a film comprising a band of markers associated with said frames in a one-to-one relationship, said markers being formed by perforations of the film, said arrangement comprising: deflecting means for imparting to the spot of said tube, in the course of each horizontal blanking interval a vertical motion causing an image of said spot to meet the marker associated with the film frame being scanned; generating means for generating a pulse signal each time said image reaches said marker; first means for receiving the pulse signals generated by said generating means and the scanning horizontal and vertical sync. signals and generating error signals representative of the errors in the vertical position of the successive scanning lines relatively to the vertical position corresponding to said correct scanning; and second means controlled by said first means for correcting the vertical centering of said flying spot tube.

3,968,405

STATIC ELECTRICITY SUPPRESSOR WITH PATTERNED COATING AND METHOD OF MAKING

Anthony Q. Testone, P.O. Box 414, Lee, Mass. 01238

Filed Apr. 14, 1975, Ser. No. 568,107
Int. Cl.² H05F 3/00
U.S. Cl. 317—2 F 12 Claims



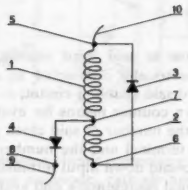
1. A static electricity suppressor comprising:
a. a sheet of electrically non-conductive material,
b. elongate electrically conductive emitter means extending transversely through said sheet, having an ionizing point outwardly of a first surface of said sheet and an opposite end adjacent a second surface of said sheet,
c. first electrically conductive coating pattern means on said first surface of said sheet in spaced relation to said point means and being exposed to atmosphere with said point means,
d. second electrically conductive pattern means on said second surface of said sheet electrically coupled to said point means,
e. means for connecting said second conductive coating pattern means to electrical source means to thereby cause said emitter to emit ions into the atmosphere, and
f. means for connecting said first conductive coating pattern means to ground to thereby provide a path to ground for ions engaging said first conductive coating pattern means.

3,968,406

DIRECT CURRENT ELECTROMAGNETIC ASSEMBLY OPERATING ON ALTERNATING-CURRENT MAINS

Daniel Arnoux, Paris, France, assignor to Chauvin Arnoux, Paris, France

Filed Jan. 20, 1975, Ser. No. 542,093
Claims priority, application France, Jan. 21, 1974, 74.01963
Int. Cl.² H02H 7/04
U.S. Cl. 317—14 B 5 Claims



1. An electromagnet of the direct-current type having rectifying means for supplying direct-current thereto from a source of alternating current, which comprises a first winding, a first diode mounted in series with said first winding, the series circuit consisting of said first winding and said first diode being connectable across an external source of alternating current for the direct feed of said electromagnet during one half-wave of the alternating current, a second winding and a second diode mounted in series with said second winding, said first and second windings being made of the same wire wound in the same direction without any break, the series circuit consisting of said second winding and second diode being connected across the terminals of said first winding for allowing a self-induction current to loop through said second winding, said second diode and said first winding, during the other half-wave of said alternating current, whereby a current due to a surge-voltage in said alternating current source and flowing through anyone of said two diodes in the reverse direction is forcibly caused to flow likewise through at least one of said first and second windings.

3,968,407

REDUNDANT INTRINSIC SAFETY BARRIER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation

Continuation of Ser. No. 455,173, March 27, 1974, abandoned. This application Sept. 8, 1975, Ser. No. 611,095
Int. Cl.² H02H 3/20, 3/08
U.S. Cl. 317—16 6 Claims

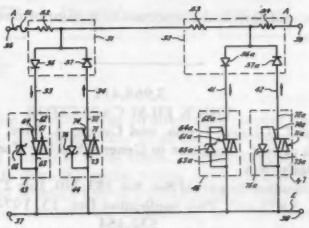
1. A redundant intrinsic safety barrier interposed within a signal line carrying bipolar d.c. voltage signals and bidirectional current flows whereby power transmitted on the signal line is limited to a safe magnitude irrespective of the voltage polarity of the signals or current flow direction, the barrier comprising:
a. a signal conductor including first and second terminals connectable into the signal line, and a circuit common;

b. fuse means and first, second and third resistances series connected in said signal conductor between said first and second terminals;

c. a first pair of unidirectional current circuits of opposite flow directions being parallel connected between the junction of said first and second resistances in said signal conductor and circuit common;

d. a second pair of unidirectional current circuits of opposite flow directions being parallel connected between the junctions of said second and third resistances in said signal conductor and circuit common;

e. said unidirectional current circuits having substantially identical, like components, each said unidirectional current circuit containing a rectifier means in series with the main terminals of a triac and circuit common, and a zener diode in series between the gate of said triac and circuit



common, and said rectifier means and zener diode both connected with like anodes or cathodes as the case may be to said signal conductor and circuit common, respectively;

f. each pair of said unidirectional current circuits having said rectifier means and zener diodes connected in parallel but with reverse polarity; and

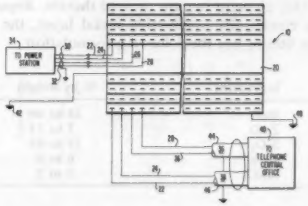
g. said first and third resistances providing for current limiting functions in said signal conductor whereby excessive bidirectional current flows on said signal conductor or bipolar voltages above the predetermined magnitude at either said first and second terminals will bias into low impedance conduction one of said corresponding triacs in said first and second pairs of said unidirectional current circuits to provide redundant power limiting in addition to said fuse means.

3,968,408

NEUTRALIZING TRANSFORMER

Gordon Y. R. Allen, 4 Ireland Court, Islington, Ontario, Canada

Filed Oct. 2, 1974, Ser. No. 511,361
Int. Cl.² H02H *3/20*
U.S. Cl. 317—17 **3 Claims**



1. A neutralizing transformer comprising:

a plurality of conductors embedded in a dielectric and forming a flat ribbon-like cable,

a flexible conductor shield coextensive with the width and length of said cable,

said cable and shield being wound around a core to form a transformer,

said shield forming the primary winding and the plurality of conductors forming the secondary windings, and

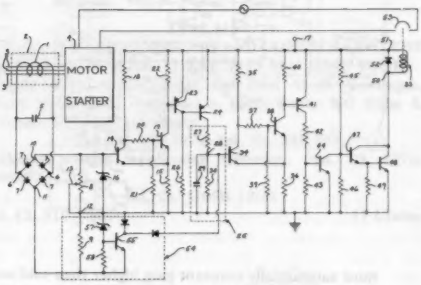
said primary winding coupled between two spaced-apart grounds whereas said secondary windings are individually coupled to a plurality of frequency sources and frequency receivers.

3,968,409

GROUND FAULT DETECTOR CIRCUIT WITH HIGH CURRENT INHIBIT

Harold W. Windler, Hales Corners, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Feb. 10, 1975, Ser. No. 548,295
Int. Cl.² H02H *7/085*
U.S. Cl. 317—32 **7 Claims**



1. A ground fault detection circuit for a motor starter, the combination comprising:

a current transformer coupled to the power lines leading to the motor starter and operable to generate a current in its secondary winding which is proportional to the ground fault current in the power lines;

a trip current level detector circuit coupled to the secondary winding and operable to generate a selected output voltage when the ground fault current reaches a first preselected level;

a time delay circuit coupled to the trip current level detector to receive the selected output voltage and operable to impart a time delay thereto;

an output circuit coupled to the time delay circuit to receive the delayed output voltage, said output circuit being coupled to the motor starter to deenergize the same when the delayed output voltage is received; and

a high current level detector circuit coupled to the secondary winding and operable to generate a disabling voltage which inhibits the application of said delayed output voltage to said output circuit when the ground fault current reaches a second preset level which is substantially higher than the first preset level.

3,968,410

STATIC OVERCURRENT RELAYS

Daniel J. Graham, Glenolden, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 10, 1974, Ser. No. 504,785
Int. Cl.² H02H *3/08*
U.S. Cl. 317—36 TD **6 Claims**

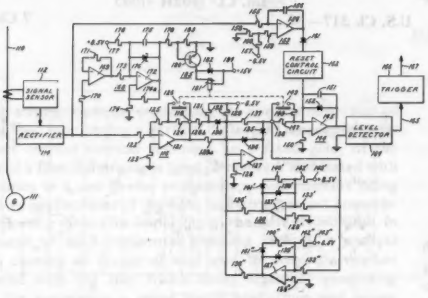
6. A protective relay adapted to be coupled to an alternating current circuit in order to produce a trip signal in delayed

response to the value of a circuit quantity becoming excessive, said relay comprising:

a. means for deriving from said circuit a unipolar voltage input signal of variable amplitude representative of said quantity,

b. amplifying means connected to said input signal deriving means for providing a modified input signal the amplitude of which is related to the amplitude of said input signal by the gain of said amplifying means;

c. function generating means having an input terminal to which said modified input signal is supplied and an output terminal at which is produced an output signal related to said modified input signal by a first substantially constant gain so long as the magnitude of said modified input signal is within a first predetermined range, by a second substantially constant gain higher than said first gain when the magnitude of said modified input signal is within a second predetermined range whose minimum limit equals the maximum limit of said first range, and by a



third substantially constant gain higher than said second gain when the magnitude of said modified input signal is within a third predetermined range whose minimum limit equals the maximum limit of said second range,

d. integrating means having an input terminal to which said output signal is supplied and being operative whenever said quantity becomes excessive for producing an integrated output signal which increased in magnitude at a rate dependent upon the value of said integrating means;

e. range changing means for automatically changing the gain of said amplifying means from a first relatively high amount to a second lower amount and for simultaneously changing the time constant of said integrating means from a first relatively long value to a second shorter value whenever the magnitude of said input signal exceeds a predetermined value; and

f. means connected to said integrating means for producing a trip signal whenever the magnitude of said integrated output signal exceeds a preselected level.

3,968,411

TRANSMITTER-RECEIVER PROTECTION DEVICE

Heinz G. Mueller, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 27, 1975, Ser. No. 562,627

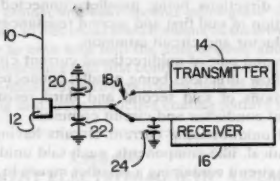
Int. Cl.² H02H 7/20

U.S. Cl. 317—61.5 **2 Claims**

1. In a transmitter-receiver system having an antenna, a TR switch, a transmitter and a receiver, an improvement comprising a protection device having a housing;

two spark gap devices connected in parallel, each of said spark gap devices having first terminals connected to the base of said antenna between said antenna and said TR switch and second terminals connected to said housing at separate and distinct points of common potential; and

additional spark gap means having a first terminal connected between said TR switch and said receiver and a



second terminal connected to a point of common potential.

3,968,412

THICK FILM CAPACITOR

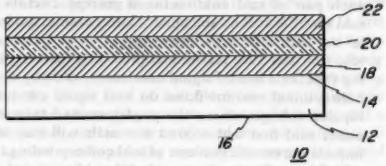
Roland T. Girard, Scotia, and George A. Rice, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 383,280, July 27, 1973, Pat. No. 3,878,443. This application Dec. 13, 1974, Ser. No. 532,454

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.² H01G 4/12

U.S. Cl. 317—258 **15 Claims**



1. A capacitor comprising

a substrate having two opposed major surfaces;

a first layer of an electrically conductive metal disposed on one of the major surfaces of the substrate to form a first electrode disposed thereon;

a layer of dielectric material having a composition which includes a barium titanate material which is one selected from the group consisting of chemically pure barium titanate and chemically pure barium titanate modified with from about 0.125% to about 5.0% by weight of a metal oxide additive and from 3 percent to 7 percent by weight of a alkali-free binder having at least the electropositive element barium present therein, disposed on the first electrically conductive metal layer, the alkali-free glass binder has the following formulation:

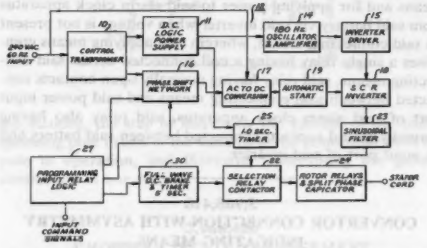
Ingredient	% by weight
BaO	38 to 46
ZnO	7 to 11
SiO_2	35 to 45
B_2O_3	6 to 8
Al_2O_3	2 to 5

a second layer of an electrically conductive metal disposed on the layer of dielectric material to form a second electrode disposed thereon.

3,968,413
VARIABLE SPEED STARTER FOR X-RAY TUBES

Louis L. Fiocca, Bensenville, Ill., assignor to Advanced Instrument Development, Inc., Melrose Park, Ill.

Filed Oct. 21, 1974, Ser. No. 516,752
Int. Cl.² H02P 7/42
U.S. Cl. 318—230 4 Claims

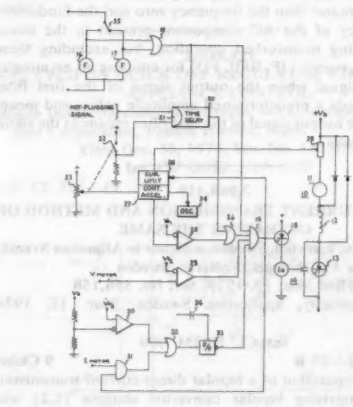


1. A system operable from an alternating current source, for controllably providing power to an induction motor for driving rotating anodes of X-ray tubes, said motor being operable to selectively drive the anode within a given speed range at a first low rate of speed and at a second higher rate of speed, a drive control circuitry for controlling the operation of the motor at the low speed operation and said same drive control circuitry controlling the operation of the motor at the higher speed operation, analog operating means for said control circuitry for providing voltages at selected first levels to the motor to thereby accelerate the anode to the selected speed within the given range, and said analog operating means providing voltages at selected second levels to the motor to maintain the anode rotating at the selected speed.

3,968,414
BYPASS CONTACTOR CONTROL

Charles Edward Konrad, Roanoke, Va., assignor to General Electric Company, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,717
Int. Cl.² H02P 1/00
U.S. Cl. 318—341 13 Claims



1. A bypass switch actuating system for an electric vehicle time ratio control having electronic switching means for varying the average voltage impressed across a traction motor in response to signals from a speed control means, directional switch means for determining the direction of torque produced by the motor, plugging sensor means for indicating the presence of plugging activity and bypass switch means for electrically bypassing said electronic switching means, comprising:

means for sensing the state of the directional switching means and outputting a first signal in response thereto;

switch means coupled to the speed control means;

time delay means coupled to said plugging sensor and said switch means and operable to produce a second signal a predetermined period of time after the closing of said switch means, in the absence of plugging activity;

means coupled to the speed control for outputting a third signal when the mark-space ratio of the electronic switching means exceeds a predetermined value;

circuit means for producing a fourth signal in response to either said second or said third signal;

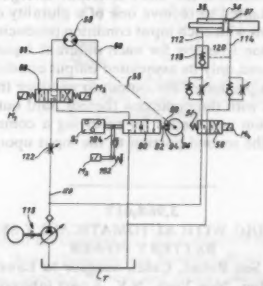
voltage sensing means for outputting a fifth signal when the voltage across the load exceeds a predetermined value; and

means for energizing the bypass switch in response to the presence of said first, fourth and fifth signals.

3,968,415
APPARATUS FOR EFFECTING AND CONTROLLING THE INDEXING OF TOOL TURRETS IN MACHINE TOOLS

Dietmar Hafla, Hohengehren, and Kurt Abele, Nenningen, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed Dec. 31, 1974, Ser. No. 537,787
Claims priority, application Germany, Jan. 10, 1974, 2401083
Int. Cl.² G05B 19/18
U.S. Cl. 318—569 17 Claims



1. Apparatus for effecting and controlling the movements of a component to a plurality of successive predetermined positions, particularly for effecting and controlling angular movements of a tool supporting device in a machine tool to a plurality of successive positions which are selected in accordance with a predetermined program, comprising a control unit including a prime mover which is rotatable clockwise and counterclockwise at a plurality of speeds, an output member rotatable by said prime mover, means for transmitting motion from said output member to said component, speed regulating means for said prime mover including a cam driven by said output member, a control element movable between a first end position in which said prime mover is free to rotate said output member at a maximum speed and a second end position in which said prime mover is arrested, means for biasing said control element against said cam, said cam having a portion which effects a gradual movement of said control element to said second end position under the action of said biasing means, and disengaging means operable to move said

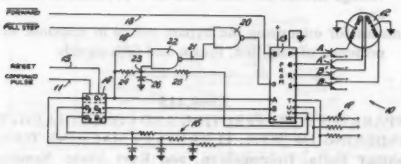
control element to said first end position; and a decoding unit having means for selecting the direction of rotation of said prime mover so as to effect a movement of said component from a preceding position to the next following position along the shorter of two possible routes including clockwise and counterclockwise rotation of said prime mover and means for timing the deceleration of said prime mover from said maximum speed, said timing means including means for deactivating said disengaging means to thus enable said biasing means to move said control element from said first end position.

3,968,416

MOTOR CONTROL FOR A STEPPING MOTOR

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed July 1, 1974, Ser. No. 484,990
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **11 Claims**



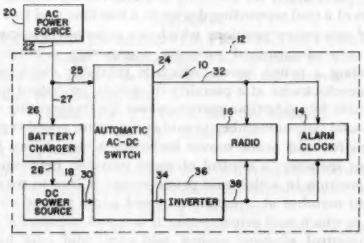
1. A motor control for a stepping motor having windings that are differently energizable in a repeating sequence with each change of energization producing an incremental movement and in which each change results from the receipt of a command pulse, said control comprising memory means having an input and an output, said output being adapted to produce a plurality of different conditions with there being one output condition for each different energization, said input being adapted to receive one of a plurality of different input conditions with each input condition producing only one output condition whereby for each different input condition there is produced only its associated output condition, means for receiving a portion of the output to energize the windings in accordance with the condition thereof, said output having a second portion and means for receiving a command pulse and applying the second portion to the input upon receipt of the pulse.

3,968,417

CLOCK-RADIO WITH AUTOMATICALLY SELECTED BATTERY POWER

Donald Dials, San Rafael, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 8, 1975, Ser. No. 575,808
Int. Cl.² H02J *7/00*
U.S. Cl. 320—2 **1 Claim**



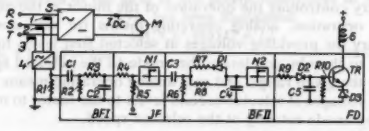
1. In combination with alarm clock apparatus, a housing for said alarm clock apparatus, said housing being adapted to receive a battery and connecting means carried by said housing for drawing electric power from a wall outlet, the improvement within said housing comprising: a battery charger fed by said connecting means and having an output connected for charging said battery; an inverter adapted to be fed by said battery, said inverter having an output port connected to a power input port of said alarm clock apparatus; and means for applying power to said alarm clock apparatus from said connecting means when voltage is present on said connecting means and for applying power to said alarm clock apparatus from said battery via said inverter when voltage is not present on said connecting means, wherein said applying means comprises a single relay having a coil connected across said connecting means, said relay having normally open contacts connected between said connecting means and said power input port of said alarm clock apparatus, said relay also having normally closed contacts connected between said battery and an input port of said inverter.

3,968,418

CONVERTOR CONNECTION WITH ASYMMETRY INDICATING MEANS

Per Kain, and Kjeld Thorborg, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 12, 1974, Ser. No. 532,210
Claims priority, application Sweden, Jan. 7, 1974, 7400131
Int. Cl.² H02H *7/10*
U.S. Cl. 321—12 **3 Claims**



1. Convertor connection for connection to a DC circuit and comprising current-sensing members (**1, 2, 3, 4, R1**) for forming a quantity corresponding to the direct current (I_{DC}) of the convertor connection, the convertor connection comprising an indicating means (BFI, JF, BFII, FD) for indicating asymmetrical operating conditions, said indicating means comprising a first band pass filter means (BFI) connected to said current-sensing members and including means to let through frequencies within a broad frequency band located between a frequency greater than the frequency zero and the fundamental frequency of the AC component present in the direct current during undisturbed operation, but excluding these frequencies, means (JF, BFII, FD) for emitting an asymmetry indicating signal when the output signal of the first filter means exceeds a predetermined amplitude value, and means to supply the output signal of the first filter means to the signal emitting means.

3,968,419

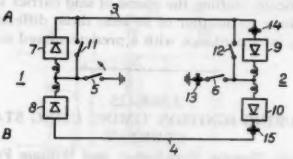
DIRECT CURRENT TRANSMISSION AND METHOD OF OPERATING THE SAME

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 13, 1975, Ser. No. 558,158
Claims priority, application Sweden, Mar. 15, 1974, 7403479
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **9 Claims**

1. In the operation of a bipolar direct-current transmission system comprising bipolar convertor stations (**1,2**) with earthed center taps (**5,6**) and connected to each other by means of two transmission lines (**3,4**), one for each polarity (**A,B**), and in which in the event of disconnection of one pole of the station the corresponding pole of the transmission line

is connected as a return conductor for the remaining pole, the method which comprises, for loading said return conductor with current and discharging the ground connection between



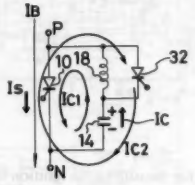
the stations, the step of increasing the current of the corresponding pole in one of the stations to the same value as in the pole in operation, and thereafter interrupting the ground connection in one station.

3,968,420

CHOPPER CIRCUIT ARRANGEMENT

Susumu Yoshida, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Oct. 4, 1974, Ser. No. 512,323
Int. Cl.² H02M 7/515
U.S. Cl. 321—45 C **10 Claims**



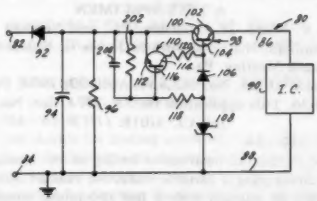
1. A circuit arrangement comprising a load circuit arrangement, a first switching means connected to said load circuit arrangement, a resonating circuit which comprises a capacitance element and an inductance element, a second switching means connected to said inductance element, and means for aiding the commutation capacity of said capacitance element in response to the load current of said load circuit arrangement.

3,968,421

DELAYED ON QUICK OFF REGULATOR CIRCUIT FOR APPLIANCE CONTROL

Roque Denis Marcade, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 30, 1974, Ser. No. 537,076
Int. Cl.² G05F 3/14, 5/00
U.S. Cl. 323—19 **9 Claims**



1. In a regulator circuit of an appliance, which regulator circuit is connected between a voltage source and an integrated control circuit powered by the voltage source, and which includes a regulator transistor having its collector-emitter circuit connected in series with the voltage source and the integrated control circuit, and its base-emitter circuit, including a Zener diode, connected across the integrated control circuit, the improvement therein comprising:

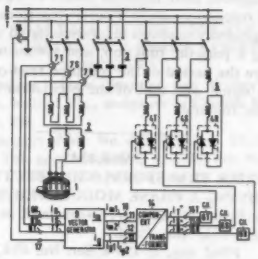
switch means, including a switch transistor having a base-emitter circuit connected in series with said Zener diode across the voltage source and a collector-emitter circuit connected across the collector-base circuit of the regulator transistor, for preventing application of potentials to the integrated control circuit which are below a predetermined level.

3,968,422

METHOD AND APPARATUS FOR THE STATIC COMPENSATION OF REACTIVE POWER

Hermann Waldmann, Weiher, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 5, 1975, Ser. No. 555,540
Claims priority, application Germany, Mar. 27, 1974, 2414807
Int. Cl.² H02J 3/18
U.S. Cl. 323—102 **6 Claims**



1. A method for carrying out static reactive power compensation of a three phase system having a three phase load, a three phase capacitor battery and a three phase converter set having short circuited, controlled reactive power converters, by deriving the control variables for the reactive power converters from the load currents by steps comprising:

a. converting the load current into a line frequency oscillation with orthogonal components;

b. obtaining from each of the orthogonal components of the oscillation two components of a current vector rotating with the line frequency;

c. developing a vector having two components from one phase of the three phase system;

d. transforming the components of the current vectors into d-c quantities by adding to said components the components of said vector derived from one phase of the three phase system;

e. developing from the d-c quantities a co-rotating vector and a counter-rotating vector each have an active and reactive component; and

f. converting the components of the counter-rotating vector and the reactive component of the co-rotating vector into control variables for the individual reactive power converters.

3,968,423

NUCLEAR MAGNETIC RESONANCE APPARATUS OF FOURIER TRANSFORM TYPE

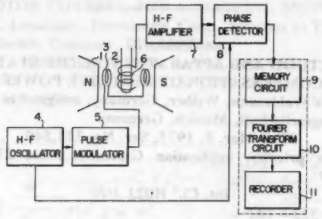
Yasutaka Hoshino; Yoshiharu Utsumi; Nobuhiko Aoki, and Hiroshi Yokokawa, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 10, 1974, Ser. No. 513,774

Claims priority, application Japan, Oct. 12, 1973, 48-113937

Int. Cl.² G01R 33/08

U.S. Cl. 324—.5 AC 8 Claims



1. A nuclear magnetic resonance apparatus of Fourier transform type, comprising memory means to store a nuclear resonance signal induced from a sample disposed in an intense unidirectional magnetic field and further exposed to an h-f impulse magnetic field; read-out means to repeatedly read out the stored resonance signal; Fourier transform means to subject the repeatedly read-out resonance signal to Fourier transform using a periodic function; and synchronizing means to synchronize the period of the repeated read-out of the stored resonance signal with that of the oscillation and stopping of the periodic function.

3,968,424

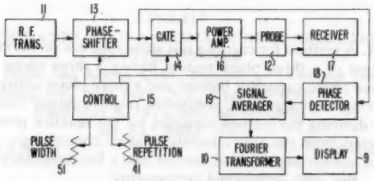
FOURIER TRANSFORM NMR SPECTROSCOPY EMPLOYING A PHASE MODULATED RF CARRIER

Richard R. Ernst, Winterthur, Switzerland, assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 1, 1974, Ser. No. 494,017

Int. Cl.² G01R 33/08

U.S. Cl. 324—.5 AC 16 Claims



1. In a magnetic resonance spectrometer:

means for generating a band of radio frequency energy for irradiation of a sample of matter to be analyzed, such band of energy having a sufficient bandwidth to cover the spectral lines of the sample to be analyzed for simultaneously exciting radio frequency magnetic resonance of different resonance spectral lines, if any, within the sample;

means for detecting the excited resonance of the sample to obtain a composite resonance signal therefrom for analysis of the sample;

means for repetitively time scanning, sampling and storing a multiplicity of successive time displaced components of the composite resonance signal in a multiplicity of respective channels;

means for reading out the signal components stored in such channels; and

said means for generating the band of radio frequency energy for irradiation of the sample including, means for generating a radio frequency carrier signal, and means for periodically shifting the phase of said carrier signal from one phase to another of at least three different relative phases in accordance with a predetermined sequence.

3,968,425

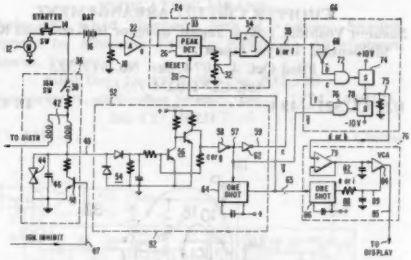
MEASURING IGNITION TIMING USING STARTER CURRENT

Richard Eric Hanson, Winchester, and William Fulmer Fordyce, Arlington, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed June 30, 1975, Ser. No. 591,951

Int. Cl.² F02P 17/00

U.S. Cl. 324—16 T 10 Claims



1. Apparatus for measuring the ignition timing of an internal combustion engine while cranking the engine with the starter motor, comprising

means coupled to the starter motor circuit to derive a waveform representing starter motor current fluctuations having peaks due to compression in individual cylinders,

means to generate from said waveform a current peaks signal indicating the times of current peaks,

means coupled to the ignition circuit to generate a points openings signal indicating the times of points openings, and

means to compare said signals to obtain a time difference signal representing the lead or lag of the ignition relative to the starter current peaks, which are displaced known amounts at given cranking speeds from times of top dead center.

3,968,426

METHOD OF A.C. INSULATION TESTING UTILIZING A VARIABLE INDUCTIVE REACTOR IN PARALLEL WITH A TEST SPECIMEN

Charles F. Ward, Jr., Malvern, Pa., and Norman L. Smith, Haddonfield, N.J., assignors to James G. Biddle Company, Plymouth Meeting, Pa.

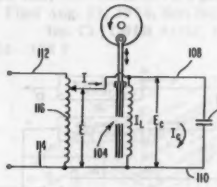
Division of Ser. No. 462,634, April 22, 1974, Pat. No. 3,883,836. This application Dec. 5, 1974, Ser. No. 529,707

Int. Cl.² G01R 31/12

U.S. Cl. 324—54 3 Claims

1. The method of destructive testing of a.c. insulation comprising connecting a variable inductive reactor across a voltage supply in parallel with a test specimen, monitoring the current supplied to the parallel circuit by said voltage supply, varying the inductance of the variable inductive reactor until its reactance equals that of, the specimen as indicated by the

supply current to the parallel circuit becoming of minimum value, and adjusting the supply voltage to a predetermined



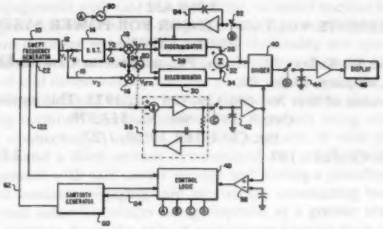
greater magnitude so as to cause, upon breakdown of the insulation, a detectable burning thereof at the point of failure.

3,968,427

GROUP DELAY MEASUREMENT APPARATUS AND METHOD

David D. Sharrit, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 11, 1975, Ser. No. 603,821
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 SS **11 Claims**



1. A method of measuring the group delay of a device under test comprising the steps of:

generating an a.c. signal that is varied from a first to a second frequency;

generating a control signal that varies in accordance with the frequency of the a.c. signal;

supplying the a.c. signal to a device under test;

receiving an output signal from the device under test;

determining the instantaneous frequency difference between the a.c. signal and the output signal;

determining the instantaneous rate of change of the control signal; and

dividing the instantaneous frequency difference by the instantaneous rate of change of the control signal to produce a signal indicative of the group delay of the device under test.

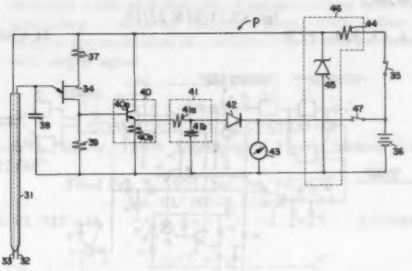
3,968,428

PORTABLE SOIL MOISTURE TESTER

Minoru Numoto, 23-14, Takanawa 3 Chome, Minato, Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,484
Int. Cl.² G01R *27/20*
U.S. Cl. 324—65 R **5 Claims**

1. In a test device for testing a condition of soil, said device including a probe having a tip adapted to be inserted into soil to be tested, spaced electrode means at said probe tip, and adjustable means for limiting the insertion of said tip into the soil to any one of a plurality of preselected depths, the improvement comprising: battery operated circuit means connected to said electrode means including a waveform shaping circuit for applying a pulsed accurately regulated voltage between said electrode means to cause a pulsed current flow, the frequency of which varies as a function of the resistance between said electrode means, and means including an integration circuit for producing a direct current the voltage of



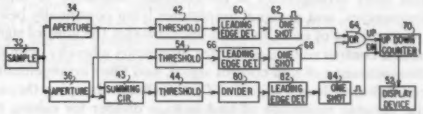
which corresponds to the resultant frequency of said pulsed current flow between said electrode means; and a direct current voltmeter responsive to said direct current to provide an accurate indication of the soil resistance between the inserted probe electrode means at said preselected depth.

3,968,429

PARTICLE ANALYZER OF THE COULTER TYPE INCLUDING COINCIDENCE ERROR CORRECTION CIRCUITRY

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 443,428, Feb. 19, 1974, Pat. No. 3,940,691. This application July 9, 1975, Ser. No. 594,209
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP **16 Claims**



1. In a particle analyzer subject to coincidence errors in counting particle pulses the combination including:

at least first and second sensing means each having substantially the same dimensions and each generating a train of particle pulses in response to passage through each of said sensing means of a sample containing a plurality of particles to be counted,

summing circuit means coupled to each of said sensing means for summing together each of said generated trains of particle pulses to develop a summed train of pulses, and

circuit means coupled to said summing means and to each of said sensing means for receiving separately said each generated train of particle pulses and said summed train of particle pulses, said circuit means being operative to mathematically change at least the number of particle pulses in said summed train of pulses in accordance with a particular mathematical formula, and to accumulate said numbers of pulses in said generated trains of pulses received and said mathematically changed summed train of pulses to produce an error corrected particle pulse count.

3,968,430

INSTALLATION FOR THE DETECTION AND PROCESSING OF ELECTRICAL SIGNALS

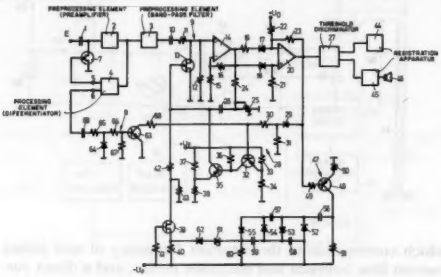
Michael Maas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 6, 1974, Ser. No. 530,354

Claims priority, application Germany, Dec. 13, 1973, 2362063

Int. Cl.² G01R 23/16

U.S. Cl. 324—77 B 21 Claims



1. In an installation for the detection and processing of electrical signals, in particular physiological measuring signals such as EKG, including a filter arrangement located in the measuring signal channel which is determinative of the desired frequency components of the signals; and a threshold discriminator for the filter output signals, the improvement comprising: said filter arrangement including a voltage divider having a voltage-controlled variable resistance, said voltage divider forming control means for varying the frequency range and the filter damping of passed-through signal components; a control voltage generator, said control voltage generator generating a control signal at signal amplitudes above the threshold of said threshold discriminator for displacing the variable resistance in the voltage divider of said filter arrangement so that the signal components previously lying above the threshold of said threshold discriminator are damped below the threshold by said voltage divider while the frequency range of said filter arrangement is concurrently displaced to higher frequencies, and at signal amplitudes lying continually below the threshold of said threshold discriminator the control signal of said control voltage generator disappears whereby, with the disappearance of said control signal, said filter arrangement is controlled to lower degrees of transmission damping through the variable resistance of said voltage divider for raising the lower signal components in a direction towards the threshold of said threshold discriminator while concurrently displacing the frequency range of said filter arrangement towards lower frequencies.

3,968,431

MEASURING REPETITION RATE

Philip A. Ekstrom, Seattle, Wash., assignor to Board of Regents, University of Washington, Seattle, Wash.

Filed May 30, 1974, Ser. No. 474,829

Int. Cl.² G01R 23/02

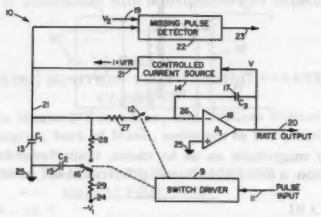
U.S. Cl. 324—78 E 11 Claims

1. Apparatus for measuring the repetition rate of a series of electrical input pulses, comprising:

reference means for providing a first electrical reference quantity of predetermined value;

ramp generator means for generating ramp signals in response to the receipt of said input pulses, each of said ramp signals being initiated by the receipt of one input pulse and terminated at a peak value of the ramp signal in response to the receipt of the next input pulse, said ramp signal increasing in amplitude from a predetermined initial value to said maximum value at a ramp rate;

comparator means for comparing said ramp signal with said reference value to provide a control signal output proportional to the difference between said peak ramp value and said reference value; and



negative feedback means connected from the output of said comparator means to said ramp generator means, for changing said ramp rate in accordance with the value of said control signal to reduce said difference to zero and thereby cause said control signal to be proportional to the repetition rate of said input pulse.

3,968,432

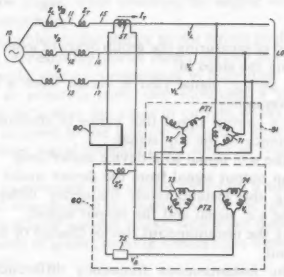
REMOTE VOLTAGE SENSOR FOR POWER SYSTEM REGULATION

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Phila., Pa.

Division of Ser. No. 406,139, Oct. 12, 1973. This application Oct. 9, 1974, Ser. No. 513,378

Int. Cl.² G01R 19/00, 1/22

U.S. Cl. 324—107 2 Claims



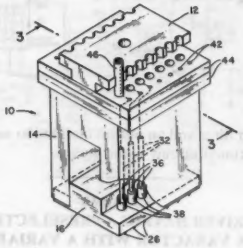
1. In voltage measuring apparatus for a three conductor three phase electric transmission line including reactive impedance between a measuring location and a remote point, transformer means for deriving from the three transmission line conductors at said measuring location a first voltage signal having the phase position of line-to-neutral voltage on at least one phase conductor of said transmission line at said measuring location, a reactive replica impedance proportional to said reactive impedance in the phase associated with said phase conductor, means responsive to line current in said phase conductor for developing across said replica impedance a second voltage signal proportional in phase and magnitude to the voltage drop in the said reactive impedance in such phase, and means for adding said first and second voltage signals to derive a resultant projected voltage signal having the phase position of line-to-neutral voltage at said remote point.

3,968,433

FIXTURE FOR TESTING FLATPACK MODULES

Joseph Dobarganes, Fords, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 22, 1974, Ser. No. 499,511
Int. Cl.[2] G01R 31/02, 1/06
U.S. Cl. 324—158 F 4 Claims



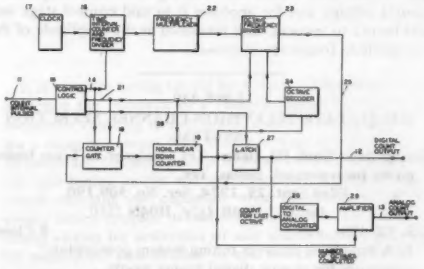
1. A fixture for testing a flatpack having a rectangular body with contact strips projecting from the sides of the body in a single plane comprising: a plug section having a recess configured for engagement about the body of the associated flatpack, said plug section having a plurality of first contacts disposed in a single plane on at least two sides of said recess for engagement with said contact strips, a center section having a generally inverted "U-shaped" cross-section with two leg sections disposed in generally parallel relationship and spaced a distance substantially equal to the distance between said sides of said recess having said first contacts disposed adjacent thereto, said center section having elongated electrically conducting members therein, each of said members being selectively connected to one of said first contacts in said plug section, and a third section dimensioned and configured for engagement with said center section and having a plurality of second contacts engaging said electrically conducting members, said second contacts being disposed at a greater transverse distance from the axis of said center section than said electrically conducting members.

3,968,434

DIGITAL TACHOMETER

George Scott Dixon, Ann Arbor, and Lawrence F. Flaczynski, Ypsilanti, both of Mich., assignors to Reliance Electric Company, Euclid, Ohio

Filed July 19, 1974, Ser. No. 489,988
Int. Cl.[2] G01P 3/48; G01R 23/02
U.S. Cl. 324—166 33 Claims



1. An apparatus for generating output signals representing velocity as a function of the time required for an object to travel a predetermined distance comprising:

means for defining a time interval representing the time required for said body to travel a predetermined distance;

clock means responsive to said means for defining a time interval for generating a train of clock pulses at a predetermined frequency;

frequency generating means responsive to said clock pulse train for generating said clock pulses in a predetermined series of plurality of predetermined rates; and

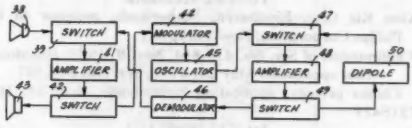
counting means responsive to said clock pulses in a predetermined series of a plurality of predetermined rates for generating a series of discrete values which define a stepped approximation of a velocity versus time curve for said output signal.

3,968,435

COMMUNICATION SYSTEM

Harris A. Stover, 10306 Mountington Court, Vienna, Va. 22180

Filed Feb. 6, 1975, Ser. No. 547,578
Int. Cl.[2] H04B 5/02
U.S. Cl. 325—16 5 Claims



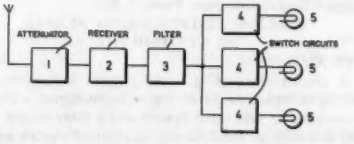
1. A near field radiating energy integral receiver-transmitter communication system wherein said transmitter comprises a microphone, a first amplifier connected to the microphone, a modulator connected to said first amplifier, a low frequency oscillator connected to said modulator, a second amplifier connected to said oscillator, a radiating dipole connected to said second amplifier, said receiver comprising first and second receiving dipoles mounted noncoplanar relative to each other, a third amplifier connected to said first receiving dipole, a first demodulator connected to said third amplifier, a fourth amplifier connected to said second receiving dipole, a second demodulator connected to said fourth amplifier, a summing network connected to first and second demodulators, a fifth amplifier connected to said summing network, a loudspeaker connected to said fifth amplifier, a head gear, and said receiver, said transmitter and said radiating dipole and said first and second receiving dipoles mounted on said head gear, and said loudspeaker mounted near a user's ear and said microphone mounted near a user's mouth.

3,968,436

APPARATUS FOR TESTING THE OPERABILITY OF EMERGENCY VEHICULAR RADIO TRANSMITTERS

Frantisek Hajek; Miroslav Studnicka, and Jaroslav Kavalir, all of Prague, Czechoslovakia, assignors to Tesla, Prague, Czechoslovakia

Filed Dec. 4, 1974, Ser. No. 529,399
Claims priority, application Czechoslovakia, Dec. 5, 1973, 8371-73
Int. Cl.[2] H04B 17/00
U.S. Cl. 325—67 4 Claims



1. In a wireless emergency call system for vehicles on public highways having a radio transmitter adapted on actuation to emit a signal in a selected one of plurality of modes, apparatus for testing the operability of said transmitter in each mode

selected, comprising an antenna for the reception of the emitted signal, an adjustable attenuator connected to the output of said antenna for suppressing spurious signals and interference, a receiver connected to the output of said attenuator for receiving said emitted signal, a filter connected to the output of said receiver for distinguishing the mode of said emitted signal, signal indicia indicative of each said modes, and switch means interposed between said filter and said signal indicia for operation of selected one of said signal indicia corresponding to the signal mode emitted by said transmitter, said apparatus being located in an enlarged housing having an entry and exit for said vehicle including means for screening the exit of the emitted signal of the vehicle transmitter from said housing and means for screening the entry of signals from without said housing.

3,968,437

RECEIVER INCLUDING AN AUTOMATIC TUNING CORRECTION SUPPRESSION CIRCUIT COUPLED TO A TUNING MEMBER

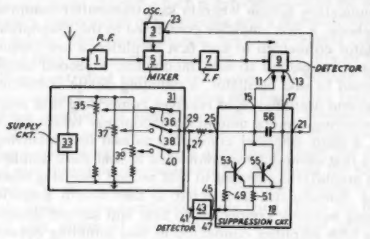
Kian Kie Ong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 413,814, Nov. 8, 1973, abandoned. This application May 21, 1975, Ser. No. 579,307

Claims priority, application Netherlands, Nov. 15, 1972, 7215429

Int. Cl.[2] H04B *1/16*

U.S. Cl. 325—422 5 Claims



1. Tuning means for an oscillator tuning member, said tuning means comprising automatic tuning correction means, automatic tuning correction suppression means for coupling to said tuning member and said automatic tuning correction means, said suppression means having a suppression activation input terminal, a tuning signal level adjusting circuit, means for applying a voltage to said adjusting circuit, tuning signal level variation detector including a differentiator coupled to said adjusting circuit and said suppression activation input to render said automatic tuning correction means inactive when said adjusting circuit output is varied.

3,968,438

OFF CHANNEL GAIN CONTROL CIRCUIT

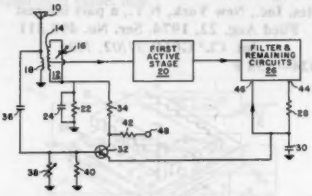
Harry Thanos, Greenville, R.I., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 27, 1975, Ser. No. 553,542

Int. Cl.[2] H04B *1/16*

U.S. Cl. 325—319 8 Claims

1. A circuit comprising a signal path including a tuned circuit input means for receiving an input signal, a first active stage coupled to said input means and a filter means coupled to said active stage for defining on channel signals within the passband of the filter and off channel signals outside of said passband, off channel gain control means having an input coupled to said tuned circuit input means for receiving strong signals across said tuned circuit and an output means coupled to said active stage for controlling the gain thereof in accordance with the strength of an off channel signal, and an on channel gain control means having an input coupled to said



path after said filter and an output coupled to said active stage through said tuned circuit input means.

3,968,439

RADIO RECEIVER HAVING A PRESELECTION CIRCUIT TUNED BY A VARACTOR WITH A VARIABLE LIMITER THRESHOLD CIRCUIT TO ATTENUATE LARGE AMPLITUDE SIGNALS

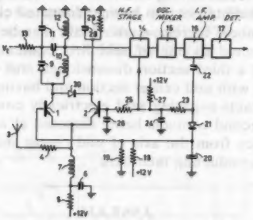
Adalbertus Hermanus Jacobus Nieveen van Dijkum, and Johannes Gerardus Albertus Kropman, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,538

Claims priority, application Netherlands, May 10, 1974, 7406291

Int. Cl.[2] H04B *1/18*

U.S. Cl. 325—319 2 Claims



1. A circuit for a radio receiver having an intermediate frequency amplifier, said circuit comprising a control stage having an input means for receiving an input signal; a varactor tuned preselection circuit coupled to said control stage; a variable threshold limiter circuit coupled to said preselection circuit for limiting the received signal applied to said preselection circuit; and means for deriving from said amplifier a control voltage and for applying it to said control stage and said limiter to increase said threshold as the amplitude of the intermediate frequency increases.

3,968,440

SOLID STATE TELEVISION CHANNEL SELECTION SYSTEM

George John Ehni, III, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 25, 1974, Ser. No. 509,190

Int. Cl.[2] H04B *1/34;* H04N *5/50*

U.S. Cl. 325—417 8 Claims

1. A broadcast receiver tuning system comprising:

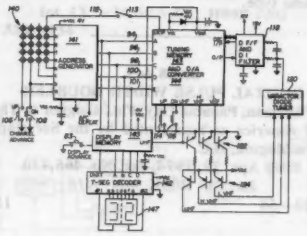
a memory for storing digital tuning words,

means responsive to said digital tuning words for tuning said receiver to a desired position,

programming switches operable to change the stored digital tuning words in said memory, and

speed control means operable in response to said switches for providing fine tuning of said receiver by slow progres-

sive change of said words in said memory for a preset time interval and thereafter providing course tuning of said



receiver by faster progressive change of said words in said memory.

3,968,441

RECEIVER TUNING CIRCUIT WITH AUTOMATIC SEARCH AND AFC USING COMMON CAPACITOR

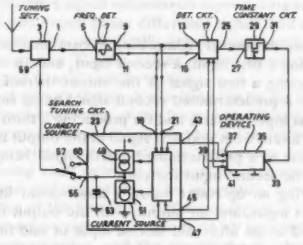
Arnoldus Garskamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 27, 1974, Ser. No. 509,803

Claims priority, application Netherlands, Oct. 4, 1973, 7313625

Int. Cl.[2] H04B *1/32*

U.S. Cl. 325—420 **3 Claims**



1. A receiver tuning circuit for a tuner comprising means for detecting the presence of a received signal having an input means for coupling to said tuner; a search tuning circuit having a capacitor means for a tuning voltage for said tuner, and an automatic frequency control circuit coupled to said capacitor, said tuning circuit and said automatic frequency control circuit charging said capacitor when activated; an operating device means coupled to said detecting means and said search tuning circuit for activation of said search tuning circuit and for subsequent deactivation of said search tuning circuit and activation of said automatic frequency control circuit upon detection of a received signal; and time constant circuit means coupled between said detecting means and said operating device means for repeatedly activating said search tuning circuit and deactivating said automatic frequency control circuit a selected time after said search tuning circuit has been deactivated.

3,968,442

RECEIVER TUNING CIRCUIT

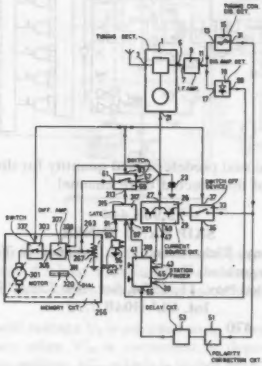
Arnoldus Garskamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1975, Ser. No. 551,644

Claims priority, application Netherlands, Feb. 27, 1974, 7402624

Int. Cl.[2] H04B *1/34*

U.S. Cl. 325—422 **4 Claims**



1. A receiver tuning circuit for a receiver having a tuning section and means for providing a tuning correction signal and a signal representative of a received signal amplitude; said circuit comprising a capacitor means for applying a tuning signal to said tuning section; a current source for supplying said tuning signal to said capacitor and further controlled by said tuning correction signal; a potentiometer having a pair of end means for receiving a voltage thereacross and a tap; a differential amplifier having a first input coupled to said capacitor, a second input coupled to said tap, and an output; a motor means coupled to said amplifier output and to said tap for adjusting the position of said tap on said potentiometer; and a switch means coupled between said tap and said capacitor for temporarily applying a tuning voltage to said capacitor to immediately tune to a desired frequency when said received signal amplitude falls below a selected level, said switch means having a control signal input means for receiving said amplitude representative signal.

3,968,443

SOLID STATE TELEVISION CHANNEL SELECTION SYSTEM

Horst Leuschner, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 25, 1974, Ser. No. 508,968

Int. Cl.[2] H04N *5/50*

U.S. Cl. 325—455 **8 Claims**

1. A television channel-number display circuit having reduced bit storage requirements comprising:

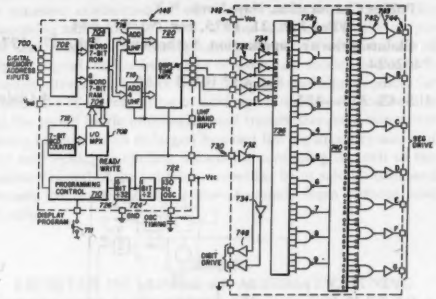
means for generating address signals representative of a selected television channel,

storage means containing a plurality of digital UHF channel-number display words and responsive to said address signals for outputting selected ones of said UHF channel-number words,

means for adding a predetermined digital quantity to said UHF channel-number display words output from said

storage means, and

a display responsive to said UHF channel-number display



words and said predetermined quantity for displaying the number of the selected UHF channel.

3,968,444

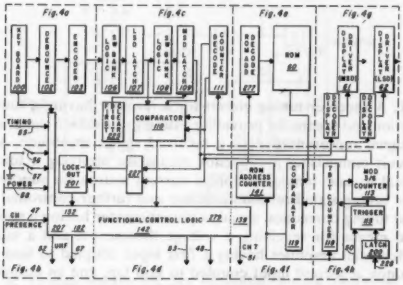
SKIP BAND TUNER

Ralph F. Tenny, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 11, 1974, Ser. No. 522,675

Int. Cl.² H04B *1/32*

U.S. Cl. 325—470 **18 Claims**



1. In a tuner for the selection of one of a plurality of broadcast channels of the same type and standard bandwidth located in a plurality of noncontiguous frequency bands within a frequency spectrum, the channels within each band being continuous, said tuner being adapted to tune continuously and repeatedly through said frequency spectrum containing all of said channels and to produce regularly spaced frequency markers while tuning through said spectrum, a control system comprising:

a. a keyboard to receive manual entry of the digits of the selected channel number and to produce electrical indicia thereof,

b. means to receive and store said channel number indicia,

c. means to initiate tuning traversals of said spectrum by said tuner,

d. means to receive and count said frequency markers generated during said traversals,

e. means to receive said frequency markers and produce a channel count indication each time the number of frequency markers receiver indicates tuner traversal of a channel bandwidth,

f. means to receive and compare said channel count indications and said stored channel number indicia and to arrest the traversal of said tuner when the comparison indicates the selected channel has been tuned by said tuner,

g. means storing indications of frequency bands within said spectrum not containing channels of said same type, and

h. means to receive and compare the stored indications and said frequency marker count and to interrupt the reception of said frequency markers by said last mentioned means to receive said frequency markers when this comparison indicates said tuner is traversing said frequency bands within said spectrum not containing channels of said same type.

3,968,445

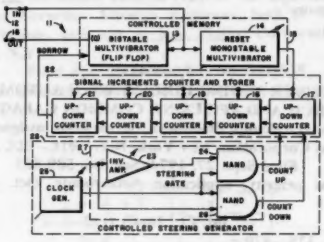
DIGITAL PULSE WIDTH DOUBLER

Walter R. Sherman, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1974, Ser. No. 466,430

Int. Cl.² H03K *5/04, 1/18*

U.S. Cl. 328—58 **15 Claims**



1. A pulse-width doubler, comprising in combination:

means, having a first input, a second input, and an output, for producing a first signal at the output thereof in response to a predetermined second signal being supplied to the first input thereof, and for producing a third signal that is different from said first signal at the output thereof in response to a predetermined fourth signal being supplied to the second input thereof;

means, having an up-count input, a down-count input, a zero reset input, and an output, with the output thereof connected to the aforesaid second input of said first and third signals producing means, for up-counting the pulses of a pulsed fifth signal being supplied to the up-count input thereof, for down-counting the pulses of said up-counted pulses in response to a pulsed sixth signal being supplied to the down-count input thereof, and for producing the aforesaid fourth signal at the output thereof immediately after the aforesaid down-counting of said up-counted pulses has been completed;

means, having an input and a pair of outputs, with the input thereof connected for response to the aforesaid predetermined second signal, and with the pair of outputs thereof respectively connected to the up-count and down-count inputs of the aforesaid up-counting and down-counting means, for respectively generating and supplying said pulsed fifth and sixth signals thereto in response to said second signal; and

means, having an input connected for response to said second signal and an output connected to the zero reset input of said up and down pulse counting means for supplying a zero reset signal thereto in immediate response to said second signal.

3,968,446

FREQUENCY AND PHASE CONTROL SYSTEM

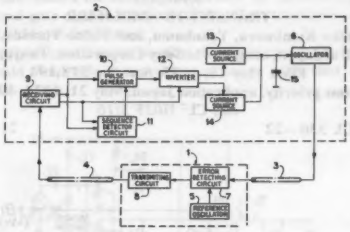
Jean-Jacques Thiebaut, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 10, 1974, Ser. No. 468,996

Claims priority, application France, May 14, 1973, 73.17384

Int. Cl.[2] 178 *69.5 DC;* H04B *1/02*

U.S. Cl. 328—134 2 Claims



1. A frequency and phase control system for synchronizing a basic signal from a first oscillator with a reference signal delivered by a reference oscillator located in a central station, said first oscillator being located in a station remote from said central station, said control system comprising:

in said central station, means for receiving said basic signal, a phase and frequency error detecting circuit, fed by said received basic signal and said reference signal, for delivering a two valve digital phase difference signal representative of the sign of the phase difference between said reference signal and said basic signal, and a permanent two value frequency difference signal representative of the sign of the frequency difference of said reference signal and said basic signal, the values of said frequency difference signal successively reproducing selected values of said digital phase difference signal, and a transmitting circuit for periodically transmitting, with a period of recurrence T , the values of said frequency difference signal to said remote station;

in said remote station, a receiving circuit for receiving each transmitted value of the frequency difference signal, and a correcting circuit, coupled to said receiving circuit, said correcting circuit including first means for temporarily storing each received value of the frequency difference signal and second means for generating, for each received value of the frequency difference signal, a corresponding correction signal, the sign of which is determined by this received value, and the amplitude of which differs according to whether this received value differs or not from the preceding one.

3,968,447

METHOD OF AMPLITUDE-FREQUENCY CONVERSION AND A CONVERTER WHICH OPERATES IN ACCORDANCE WITH SAID METHOD

Bernard Baylac, Sassenage; Robert Poujois, Grenoble, and Jacques Ripert, Saint-Martin-d'Heres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 13, 1973, Ser. No. 424,202

Claims priority, application France, Dec. 29, 1972, 72.47081

Int. Cl.[2] H03K *1/16, 3/72*

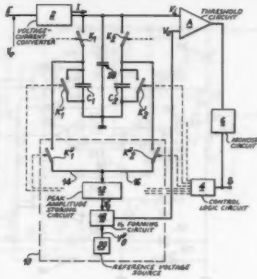
U.S. Cl. 328—151 12 Claims

1. A method for converting the amplitude of an electrical signal into a frequency in which:

said amplitude is converted into a current of proportional intensity,

said current is integrated in an integrating circuit and an integration voltage is developed at the terminals of said circuit,

there is produced a signal for initiating the stopping of said current integration and a signal for initiating the start of a following integration at the instant when the integration voltage attains a threshold value V_0, actual stopping of



the integration being intended to take place only after a time-delay θ whilst the integration voltage exceeds the value V_0 and attains a maximum value V'_0,

wherein:

the threshold voltage V_0 is adjusted so as to ensure that said maximum value V'_0 is controlled in dependence on a reference voltage V''_0 which is higher than V_0.

3,968,448

ELECTRICAL FILTERS

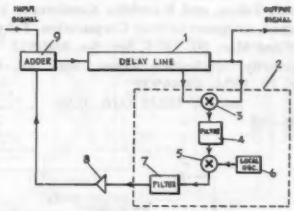
Luis Charles Stenning, Beaconsfield, England, assignor to The General Electric Company Limited

Filed Oct. 10, 1974, Ser. No. 513,778

Claims priority, application United Kingdom, Oct. 17, 1973, 48445/73

Int. Cl.[2] H03B *1/00, 1/04;* H03K *5/00;* H04B *1/10*

U.S. Cl. 328—167 4 Claims



1. An electric filter comprising:

A. an analogue delay line;

B. means for applying to the input of the delay line an input signal containing a pseudo-random sequence signal;

C. feedback means for producing a feedback signal in response to the signals appearing at two or more points along the length of the delay line; and

D. combining means for combining said feedback signal with said input signal;

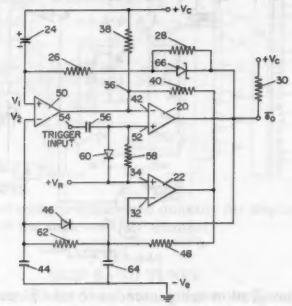
E. the positions of said points along the length of the delay line being so phase related to said pseudo-random sequence signal and

F. said feedback means being so constructed in dependence on said pseudo-random sequence that, at the input of the delay line, said pseudo-random signal in said input signal is reinforced by said feedback signal while all the other signals are not.

3,968,449
RATE COMPENSATING MONOSTABLE MULTIVIBRATOR

Curtis R. Dunnam, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 16, 1974, Ser. No. 533,033
Int. Cl.² H03K 3/10
U.S. Cl. 328—207 **11 Claims**



1. A self-compensating, time variable monostable multivibrator circuit comprising:

bistable switching means having an even number of inputs for receiving input trigger pulses on one of said inputs and two outputs, one of which outputs is coupled to a load;

a pair of time constant networks having unequal time constants to which the other of said outputs of the bistable switching means is coupled for generating a pair of control voltage signals;

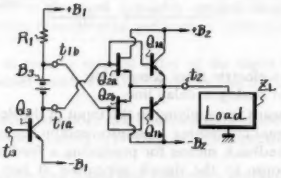
comparator means for comparing said pair of control voltage signals and for generating a comparison voltage; and

means for coupling said comparison voltage to another of said inputs of said bistable switching means for providing self-compensation of said multivibrator.

3,968,450
TRANSISTOR AMPLIFIER

Tadao Suzuki, Tokyo, and Kazuhiko Kamimura, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1975, Ser. No. 560,512
Claims priority, application Japan, Mar. 29, 1974, 49-35282; Apr. 25, 1974, 49-46939
Int. Cl.² H03F 3/16, 3/26
U.S. Cl. 330—15 **24 Claims**



1. A transistor amplifier, comprising:

a field effect transistor having triode-type dynamic characteristics in combination with a bipolar transistor, said field effect transistor including drain, gate and source electrodes, and having a current flowing therein that is a function of an input signal, said bipolar transistor including collector, base and emitter electrodes and having at least one of said collector and emitter electrodes connected directly to at least one of said drain and source electrodes, said bipolar transistor being substantially nonconductive until said field effect transistor current reaches a threshold level and then having a current flowing therein that is a function of said input signal once said field effect transistor current reaches said threshold level;

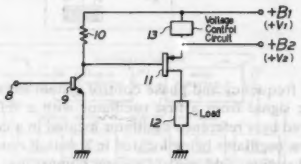
means connected to said combination for supplying at least a portion of the summation of said field effect and bipolar transistor currents to a load; and

means for supplying said input signal to said combination.

3,968,451
TRANSISTOR AMPLIFIER

Kazuhiko Kamimura, Yokohama, and Tadao Yoshida, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 16, 1975, Ser. No. 578,194
Claims priority, application Japan, May 21, 1974, 49-57006
Int. Cl.² H03F 3/16
U.S. Cl. 330—22 **21 Claims**



1. A transistor amplifier comprising:

a transistor having an input electrode for receiving an input signal and first and second output electrodes;

a field effect transistor having triode-type dynamic characteristics, the gate electrode of said field effect transistor being coupled to one output electrode of said transistor for receiving a voltage and the source and drain electrodes of said field effect transistor being connected to a load impedance;

power supply means including first means for supplying a first operating voltage to said one output electrode of said transistor and second means for supplying a second operating voltage to said field effect transistor; and

voltage control means coupled to said first and second means and responsive to fluctuations in said second operating voltage for causing said first operating voltage to change such that said voltage received by said gate electrode is correspondingly modified to thereby stabilize a bias current flowing through said field effect transistor, notwithstanding said second operating voltage fluctuations.

3,968,452
SIGNAL LEVEL CONTROL CIRCUIT

Hiroshi Sahara, Tokyo, and Yutaka Tanaka, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1974, Ser. No. 521,394
Claims priority, application Japan, Nov. 13, 1973, 48-127460; Dec. 14, 1973, 48-140525; Dec. 15, 1973, 48-140842
Int. Cl.² H03G 3/30
U.S. Cl. 330—29 **8 Claims**

7. A signal level control circuit comprising:

A. an input signal source;

B. a resistive layer insulator semiconductor field effect transitor comprising:

1. a semiconductor substrate of one impurity type,

2. two spaced regions of opposite conductivity type in respect to said substrate in one face thereof providing source and drain regions respectively,

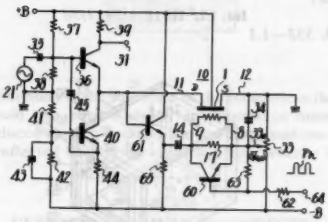
3. a layer of insulating material overlying said one face,

4. a layer of resistive material overlying said insulating layer,
5. source and drain electrodes making ohmic contact with said source and drain regions respectively, and
6. first and second gate electrodes making ohmic contact with the portions of said resistive layer which overlies said source and drain regions respectively;

C. circuit means for making the A.C. potential at the first gate electrode of said field effect transistor substantially same as the A.C. potential at the source electrode thereof;

D. circuit means including a condenser for connecting the second gate electrode of said field effect transistor to the drain electrode thereof;

E. circuit means for connecting the drain and source path of said field effect transistor in series with said input signal source;



F. signal output means connected to said circuit means for connecting the drain-source path of said field effect transistor in series with said input signal source;

G. control means for applying a control voltage to the first and second gate electrodes of said field effect transistor to control the equivalent impedance between the drain and source electrodes and thereby to control the signal level obtained from said signal output means; and

H. constant current source means connected between said control means and said circuit means including a condenser for connecting the second gate of said field effect transistor to the drain electrode thereof for varying the voltage at the drain side of said condenser in the same direction as the voltage at said second gate side of said condenser when said control voltage varies.

3,968,453

GAIN CONTROL CIRCUIT

Masayuki Hongu, Komae, and Tsutomu Niimura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 2, 1974, Ser. No. 528,935

Claims priority, application Japan, Dec. 1, 1973, 48-135093; May 9, 1974, 49-51565

Int. Cl.[2] H03G *3/30*

U.S. Cl. 330—29 **4 Claims**

1. A gain control circuit comprising:

a differential amplifier including first and second differentially connected transistors, a base input circuit connected to the base of at least said first transistor and an output circuit;

an input transistor;

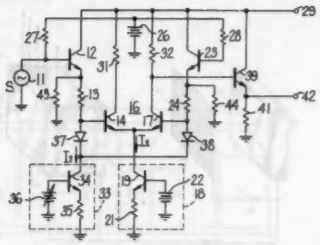
an impedance connecting the emitter of said input transistor to the base input circuit of the differential amplifier;

an input signal voltage source connected to the base of said input transistor;

a constant current source connected in series with the collector-emitter paths of said first and second differentially connected transistors between a power supply source and ground;

a controllable current source;

variable impedance means connecting said controllable current source to said base input circuit of said differential amplifier, the impedance value of said variable impedance means being controlled as a function of the current of said controllable current source so that the gain of said differential amplifier is determined by the ratio of the current of said constant current source to said current of the controllable current source; and



current conducting circuit means connected to said emitter of said input transistor to carry part of the emitter current of said input transistor and thereby maintain a substantially low output impedance of said input transistor, as measured at said emitter thereof, even when said current of the controllable current source is reduced to a substantially small value for maximum gain of said differential amplifier.

3,968,454

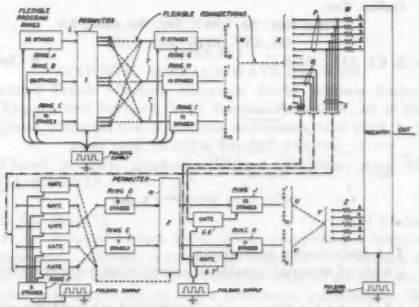
SIGNALING CIRCUIT

Aloysius J. Busch, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 27, 1944, Ser. No. 555,914

Int. Cl.[2] H04L *9/04*

U.S. Cl. 331—78 **19 Claims**



1. In a pulse-producing system, a plurality of space discharge tube ring circuits each comprising a different number of stages, the numbers of stages in the rings having no common factor greater than one, means to cause said rings to step in unison, means to derive output voltage pulses from certain stages of individual rings and spaces from the other stages, and means to combine the outputs of all of said rings in a common utilization circuit.

3,968,455

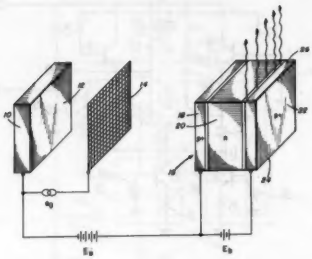
INJECTION LASER WITH INTEGRAL MODULATOR

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 335,978, Feb. 26, 1973, abandoned. This application Mar. 5, 1974, Ser. No. 448,303

Int. Cl.[2] H01S *3/00*

U.S. Cl. 331—94.5 H 9 Claims



1. A semiconductor laser comprising:

a first p-type semiconductor layer,

a second n-type semiconductor layer adjacent said first layer,

a third p-type semiconductor layer adjacent said second layer on the opposite side of said second layer from said first layer,

means to apply an electric field across said three layers so that the junction between said first and second layers is reverse-biased and the junction between said second and third layers is forward-biased, and

means for directing an electron beam onto said first layer to cause current to flow through said junctions causing laser light to be emitted from the region of said forward-biased junction.

3,968,456

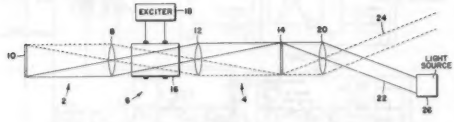
REGENERATIVE LASER DEVICE

Albert B. Welch, Dallas, Tex., assignor to Vought Corporation, Dallas, Tex.

Filed Nov. 24, 1967, Ser. No. 686,383

Int. Cl.[2] H01S *3/05*, *3/09*

U.S. Cl. 331—94.5 C 8 Claims



1. A laser device comprising:

a body of material capable of energy state population inversion;

a first retrodirective member positioned adjacent one end of said body and formed of a converging lens and a highly transmissive mirror which reflects less than half of the radiation incident thereon;

a second highly reflective retrodirective member positioned adjacent the opposite end of said body and cooperating with said first retrodirective member to define a resonant cavity having a plurality of transverse modes;

a collimating lens located outside of said resonant cavity and positioned with the focal plane of said collimating lens extending coincident with said highly transmissive mirror to cause light occurring in the field of view defined by said collimating lens to be focused on said highly transmissive mirror;

excitation means for exciting said body of material to an energy level such that the loop gain of said device is substantially equal to unity; and

energy source means located outside of said resonant cavity for supplying additional energy through said collimating lens and said transmissive mirror to increase radiation in at least one of the transverse modes in said resonant cavity.

3,968,457

MICROWAVE NON-RECIPROCAL JUNCTION DEVICE

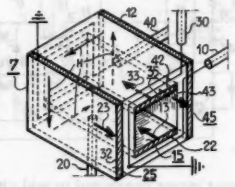
Bernard Desormiere, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 11, 1975, Ser. No. 549,051

Claims priority, application France, Feb. 12, 1974, 74.04657

Int. Cl.[2] H01P *1/34*, *1/38*

U.S. Cl. 333—1.1 6 Claims



1. A microwave multiple channel non-reciprocal junction device having first, second . . . m^{th} junctions and first, second, . . . n^{th} channels, m and n, being integers greater than 1 and $n \leq m \leq n+1$, for the propagation of spin surface waves from the p^{th} channel ($1 < p < n-1$) to the $(p+1)^{th}$ channel through the p^{th} junction, said junctions having linear parallel propagation axes, said junction device comprising:

a ferrimagnetic material having a substantially constant thickness, said material having major opposite faces and two end parallel lateral faces orthogonal to said major faces, said propagation axes being orthogonal to said end faces;

inductor means for applying, within said ferrimagnetic material, a DC magnetic field within said major faces, parallel to said end faces;

m parallel successive metal strips alternately located on parts of said major opposite faces along a direction parallel to said propagation axes, said parallel metal strips defining in said ferrimagnetic material adjacent underlying portions, two of said underlying portions consecutive one another having their corresponding metal strips respectively located on one and the other of said major faces, one of said metal strips and the corresponding underlying portion forming one of said junctions;

electrical means for coupling said p^{th} channel and said $(p+1)^{th}$ channel to said p^{th} junction, located on said end faces, said electrical means being adapted for emitting and receiving said spin surface waves.

3,968,458

MICROWAVE POWER REFLECTOR USING EDGE-GUIDED MODE

Joseph W. McGowan, Monmouth, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

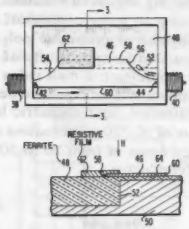
Filed Sept. 26, 1975, Ser. No. 617,209

Int. Cl.[2] H01P *1/36*

U.S. Cl. 333—24.2 12 Claims

1. A microwave transmission device having a planar stripline conductor coupled between a pair of signal ports, being

formed on a ferromagnetic substrate contiguous with a ground plane and having a biasing magnetic field of a predetermined magnitude applied thereto transverse to said ground plane to effect energy travel along at least one edge of said stripline conductor between said signal ports, the improvement comprising:



a discontinuity in the thickness of the substrate in the region of said one edge whereby an impedance mismatch is produced causing energy traveling along said one edge to be reflected back in the direction from whence it came.

3,968,459

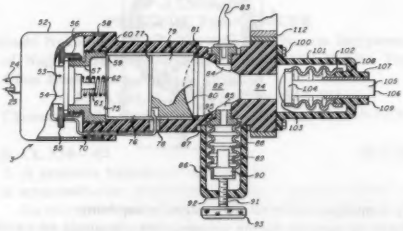
ULTRASONIC DRIVER TRANSDUCER

Peter E. Jacobson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 29, 1975, Ser. No. 544,979

Int. Cl.² H03H *9/04, 9/10, 9/14;* **H01L** *41/10*

U.S. Cl. 333—30 R **13 Claims**



1. An electromechanical transducer comprising:

piezoelectric driver means having a radiating surface for radiating ultrasonic waves,

acoustic lens means for receiving said radiated ultrasonic waves through a first surface,

said acoustic lens means having a second surface of concave shape for converging ultrasonic waves passing through said acoustic lens,

hollow container means for enclosing said piezoelectric driver means and said acoustic lens means,

said hollow container means defining an interior cavity extending from said concave second surface along the axis thereof, and

ultrasonic wave coupler means extending along said axis through said hollow container means and having a wave input face opposite said concave face within said interior cavity and a wave output face external of said hollow container means,

said interior cavity being filled with liquid for propagating said converging ultrasonic waves from said acoustic lens into said wave input face of said ultrasonic wave coupler means substantially without reflection.

3,968,460

ACOUSTIC SURFACE-WAVE DEVICES

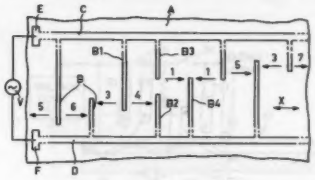
Kenneth William Moulding, Horley, and David William Parker, Reigate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 24, 1974, Ser. No. 491,559

Claims priority, application United Kingdom, Aug. 3, 1973, 36940/73

Int. Cl.² H03H *9/02, 9/26, 9/32*

U.S. Cl. 333—72 **7 Claims**



1. An acoustic surface-wave device comprising a body of piezoelectric material on one surface of which is formed a launching or receiving transducer including an interdigital array of electrodes which includes at least one set of four spaced electrodes, in which set the first and second electrodes are spaced apart along the line of acoustic surface-wave propagation through the transducer and overlap transverse to said propagation line, the third electrode is aligned with the second electrode and is electrically connected in common with the first electrode, and the fourth electrode is spaced apart from the second and third electrodes in said line of propagation, overlaps the third electrode transverse to said propagation line and is electrically connected in common with the second electrode, and means for applying an electric potential to said array of electrodes such that in operation the electrical field between the overlapping third and fourth electrodes has the same direction as the electrical field between the overlapping first and second electrodes.

3,968,461

ACOUSTIC SURFACE-WAVE DEVICES

Richard Frank Mitchell, Kingston; David William Parker, Reigate, and Bernard David Rapson, Newdigate, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,506

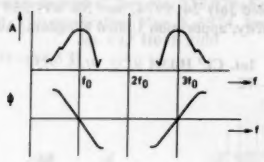
Claims priority, application United Kingdom, Aug. 31, 1973, 41024/73

Int. Cl.² H03H *9/20, 9/32*

U.S. Cl. 333—72 **4 Claims**

1. An acoustic surface wave device comprising a body of piezoelectric material, a transducer disposed on a surface of said body and including an interdigital array of parallel electrodes, said electrodes having a dimension according to the Fourier transform of a function which corresponds to a predetermined frequency response of the array, said predetermined response including a non-symmetrical passband amplitude-frequency response about a frequency f_o, a non-symmetrical passband amplitude-frequency response about a frequency $f_o + 2x$ which is the mirror image of the amplitude-frequency response about the frequency f_o, wherein x is a selected constant and f_o is a selected frequency, and a stopband extending between the two passbands about f_o and $f_o + 2x$, each electrode of the array being spaced from its adjacent electrodes at half a wavelength of acoustic surface waves corresponding to the frequency $f_o + x$, at least some pairs of immediately adja-

cent electrodes being electrically connected in common, and for at least some of the said pairs of immediately adjacent



electrodes which are electrically connected in common, the two electrodes of those pairs being of unequal length.

3,968,462

ELECTROMECHANICAL RESONANCE DEVICE AND ITS APPLICATION TO FILTERING OF TELEVISION SIGNALS

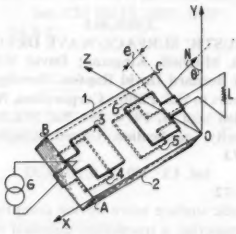
Gérard Coussot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 15, 1975, Ser. No. 596,100

Claims priority, application France, July 19, 1974, 74.25171

Int. Cl.² H03H *9/26, 9/32;* **H01L** *41/18;* **H10L** *41/08*

U.S. Cl. 333—72 **5 Claims**



1. An electromechanical resonator device comprising: a piezo-electric plate cut from a lithium niobate crystal, and positioned on the two principal parallel faces of said piezo-electric plate, at least one pair of mutually opposite electrodes delimiting a resonator element; said piezo-electric plate constituting in relation to the direct system of rectangular crystallographic axes X, Y and Z of said lithium niobate crystal, a y + 37° cut; the normal to said principal parallel faces forming in relation to the Y axis of said system an angle; the positive value of said angle being substantially equal to 37°; the X axis of said system being substantially parallel to said principal parallel faces.

3,968,463

COAXIAL CABLE WITH IMPROVED PROPERTIES

Robert L. Boysen, Lebanon, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 386,749, Aug. 8, 1973, abandoned. This application July 24, 1974, Ser. No. 491,345

Int. Cl.² H01P *3/06*

U.S. Cl. 333—96 **5 Claims**

1. A coaxial cable having improved mechanical and electrical properties comprising an inner conductor; an outer inert gas blown cellular ethylene or propylene polymer dielectric layer having in unexpanded form a density of about 0.86 to 0.96 grams per cubic centimeter, a melt index of about 0.05 to 10 decigrams per minute and an expanded density up to 0.6 grams per cubic centimeter, said dielectric layer having a dissipation factor value of ≤ 250 microradians at an electrical transmission frequency range of from 50 to 300 mega Hertz; and an outer coaxial conductor.

3,968,464

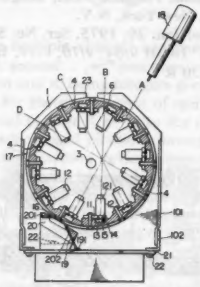
MULTIPLE TUNING SYSTEM

Yoshinori Okada, Kadoma; Terumi Toyoshima, Hirakata, and Eizo Mori, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 3, 1974, Ser. No. 511,526

Int. Cl.² H03J *5/30, 1/06*

U.S. Cl. 334—50 **6 Claims**



1. A multiple band tuning system, comprising:

a pair of mutually-facing support plates mounted on a rotatable shaft;

a plurality of base members, each having an arcuately-shaped outer surface;

means releasably mounting said base members to said support plates, said base members forming a substantially cylindrical outer surface when mounted to said support plates;

a plurality of frequency tuning printed circuit bases mounted on the inner surface of each base member; said circuit bases each having a frequency tuning circuit mounted thereon for tuning a given frequency,

a plurality of electrical contact members connected to each said printed circuit base and extending to the outer arcuate surface of the base member on which said circuit base is mounted; and

contact means mounted on a frame for engaging corresponding contact members on said base members to connect a predetermined one of said frequency tuning circuits to a further circuit mounted on said frame;

whereby said frequency tuning circuits arranged on one of said base members are adjusted by removing another of said base members opposite said one of said base members.

3,968,465

INDUCTOR AND METHOD FOR PRODUCING SAME

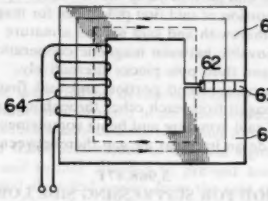
Masahiko Fukui, Kumagaya; Hiromi Sako, Fukaya, and Masao Ogata, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 17, 1974, Ser. No. 471,157

Claims priority, application Japan, May 18, 1973, 48-54625; July 23, 1973, 48-80924; July 23, 1973, 48-80925; July 20, 1973, 48-80588; Jan. 30, 1974, 49-112060[U]; Feb. 22, 1974, 49-120819[U]

Int. Cl.² H01F 21/00

U.S. Cl. 336—110 11 Claims



1. An inductor device comprising:

a magnetic circuit made of soft magnetic material and end faces defining a gap in one position in said circuit;

a coil wound around a portion of said magnetic circuit; and

a plurality of permanent magnet pieces disposed in said gap between said end faces said permanent magnet pieces being substantially disposed in a common plane and spaced in said plane in each of two orthogonal directions, the poles of said permanent magnet pieces being aligned in like directions in said plane.

3,968,466

PRESSURE TRANSDUCER

Hiroshi Nakamura; Kouji Tsukada, and Susum Sugiyama, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Oct. 9, 1974, Ser. No. 513,301

Claims priority, application Japan, Oct. 9, 1973, 48-113601

Int. Cl.² H01C 7/16

U.S. Cl. 338—42 20 Claims

1. A pressure transducer comprising:

a semiconductor diaphragm having a predetermined conductivity and including a strain sensitive region adapted to be elastically deformed by means of pressure applied thereto and a fixing region;

strain sensitive elements insulatingly disposed upon said diaphragm and relative to the crystallographic directions of said diaphragm so as to exhibit high sensitivity and within the vicinity of the central and peripheral portions of said strain sensitive region;

lead portions, for transmitting electrical signals, insulatingly mounted upon said diaphrahm and extending from said strain sensitive region to one side of an end portion in said fixing region for electrically interconnecting said central and peripheral strain sensitive elements in order to form a bridge circuit which includes said central and outer strain sensitive elements and said lead portions;

electrodes respectively provided upon said lead portions within said one side of the end portion in said fixing region;

a supporting member including a supporting portion for supporting said semiconductor diaphragm by means of said fixing region of said diaphragm and a leading portion for conducting said electrical signals therethrough; and

lead wires, connected to said electrodes and to external processing apparatus, disposed within and through said leading portion of said supporting member.

whereby said electrical signals detected by means of said strain sensitive elements are conducted to said electrodes by said lead portions and further conducted outwardly of said transducer by said lead wires.

3,968,467

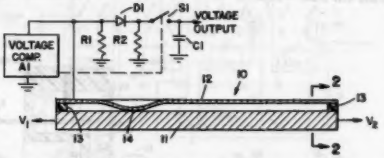
TOUCH CONTROLLED VOLTAGE-DIVIDER DEVICE

Stephen H. Lampen, San Francisco, and William E. Hearn, Berkeley, both of Calif., assignors to Stephen H. Lampen, San Francisco, Calif.

Division of Ser. No. 394,161, Sept. 4, 1973, Pat. No. 3,895,288. This application Nov. 1, 1974, Ser. No. 519,825

Int. Cl.² H01C 10/30

U.S. Cl. 338—119 2 Claims



1. In a voltage-divider device:

a. a resistive member having an elongated resistive surface;

b. a conductive member having an elongated conductive surface mounted in close spaced substantially coextensive relationship with said resistive surface;

c. means for selectively establishing galvanic contact between each of a plurality of points along the length of said resistive surface and the point corresponding thereto along the length of said conductive surface by a touch of the finger;

d. elongated voltage responsive visual indication means physically located along the length of said elongated resistive and conductive surfaces in close spaced substantially coextensive relationship therewith and adapted to produce a different visual indication in response to each of a plurality of different voltages corresponding to each of said plurality of points along the length of said resistive surface;

e. terminal means for making electrical connection to opposite ends of said elongated resistive surface; and

f. terminal means for making electrical connection from the conductive member to said elongated voltage responsive visual indication means.

3,968,468

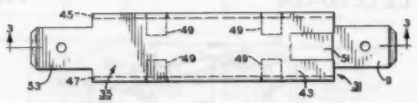
ELECTRICAL SWITCH AND METHOD OF CALIBRATING

Edward O. Andersen, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed June 10, 1974, Ser. No. 477,828

Int. Cl.² H01H 61/02, 63/013, 65/00

U.S. Cl. 337—107 27 Claims



1. An electrical switch comprising supporting means, movable means on said supporting means and operable generally in response to heat supplied thereto between a pair of circuit controlling positions, said movable means being adapted to deflect upon subjection to a selected calibrating temperature toward a generally free predetermined configuration on said supporting means in one of the circuit controlling positions,

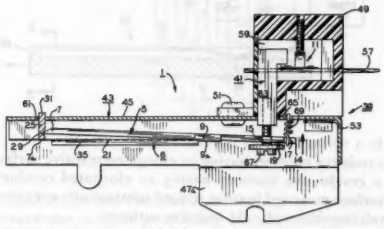
means subjected to the selected calibrating temperature for fixedly assembling a portion of said movable means to said supporting means when said movable means is deflected toward its generally free predetermined configuration, and means disposed on said supporting means for heating said movable means to effect its operation between the circuit controlling positions upon energization of said electrical switch.

3,968,469

DETECTOR FOR RADIANT HEAT

Stanley J. Budlane, Fulton, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 23, 1974, Ser. No. 463,299
Int. Cl.[2] H01H 71/18
U.S. Cl. 337—139 **21 Claims**



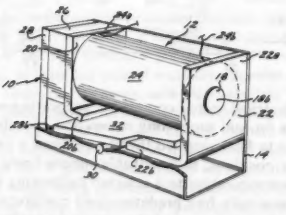
1. A detector for radiant heat comprising a housing, means movable in said housing between positions for controlling an electrical circuit therethrough, means disposed in the housing for actuating said controlling means including a pair of generally metallic strips disposed at least part in overlaying relation and having adjacent portions thereof respectively interconnected, said housing including means for subjecting one of said strips directly to the radiant heat with said one strip generally shielding at least in part the other of said strips from direct subjection to the radiant heat, means in said housing and spaced from said interconnected adjacent portions of said strips for separating them, said one strip being elongatable in response to the direct subjection of radiant heat thereto with respect to said shielded other strip for effecting conjoint pivotal movement of said strips generally about said separating means, and means between said actuating means and said controlling means for effecting movement of said controlling means to at least one of its circuit controlling positions upon the conjoint pivotal movement of said strips.

3,968,470

MAGNETIC MOTOR

Jack M. Brown, Costa Mesa, Calif., assignor to Esterline Electronics Corporation, Costa Mesa, Calif.

Filed Mar. 13, 1975, Ser. No. 557,959
Int. Cl.[2] H01F 7/08
U.S. Cl. 335—230 **6 Claims**



1. A magnetic motor comprising in combination,

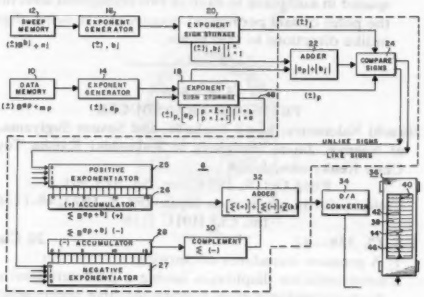
an elongated core member having opposite end portions,
a winding on said core member to be electrically energized to afford electromagnetic flux in said core member,
a first pole piece fixed to one end portion of said core member,
a second pole piece fixed to the other end portion of said core member,
a permanent magnet adjacent said second pole piece,
a third pole piece adjacent said permanent magnet opposite said second pole piece thereat,
and an armature and pivotal support means therefor for pivotal movement of said armature about an axis intermediate first and second end portions thereof, said first armature end portion being substantially coplanar with at least a portion of said first pole piece for magnetic cooperation therewith and said second armature end portion being movable between magnetic cooperation with said second and third pole pieces alternatively,
said first armature end portion and said first pole piece being spaced from each other throughout pivotal movement of said armature and being complementally shaped to provide an irregular air gap therebetween.

3,968,471

METHOD FOR SUPPRESSING SIDE LOBES IN CORRELATION PROCESSES

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Continuation-in-part of Ser. No. 218,284, Jan. 17, 1972, Pat. No. 3,863,058. This application Nov. 10, 1972, Ser. No. 305,623
Int. Cl.[2] G01V 1/28, 1/36
U.S. Cl. 340—15.5 CC **21 Claims**



1. A method of geophysical exploration comprising:
introducing into the earth a first vibratory signal,
detecting its return signal from the earth,
cross-correlating the return signal with a representation of the first signal, and
randomly varying the level of the representation of the first signal prior to cross-correlation.

3,968,472

VIBRATION DETECTION AND ANALYSIS SYSTEM EMPLOYING AN INTRINSIC SAFETY BARRIER

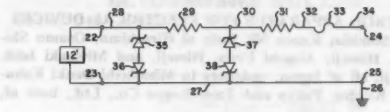
James K. Taylor, Columbus, Ohio, assignor to IRD Mechanalysis, Inc., Columbus, Ohio

Division of Ser. No. 145,420, May 20, 1971, abandoned. This application June 14, 1973, Ser. No. 369,993
Int. Cl.[2] G01S 3/80; H02H 1/02
U.S. Cl. 340—16 R **6 Claims**

1. A vibration analysis system adapted for use in remote vibration measurements in combustible hazardous zones comprising:
an electromechanical vibration transducer mounted within the said hazardous zone and adapted to generate alternating current signals in response to mechanical vibrations;

signal responsive means mounted in a non-hazardous zone which is remote from said hazardous zone and adapted to convert an alternating alert signal into visible or mechanical phenomena;

conductor means joining the said transducer and the said signal responsive means, said conductor means passing from the said hazardous zone to the said non-hazardous zone;



an intrinsic safety barrier device comprising more than one semiconductor interposed in the said conductor means to permit substantially undistorted signal transmission from the said transducer means to the said signal responsive means and further adapted to prevent transmission of substantial electrical energy from the said signal responsive means into the said hazardous zone.

3,968,473

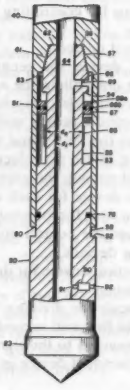
WEIGHT-ON-DRILL-BIT AND TORQUE-MEASURING APPARATUS

Bobbie J. Patton, Dallas, and Vasel R. Slover, Irving, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 448,123, March 4, 1974, abandoned. This application July 7, 1975, Ser. No. 593,354

Int. Cl.[2] G01V *1/40*

U.S. Cl. 340—18 LD **6 Claims**



1. A logging-while-drilling tool comprising:

a. a drill collar,

b. means for affixing a drill bit to the lower end of said drill collar,

c. means for converting axial motion transmitted to said drill collar by said drill bit during drilling operations within a borehole to a weight-on-drill-bit measurement,

d. means for detecting the pressure differential across said drill bit, and

e. means for compensating said weight-on-drill-bit strain measurement for the effect on said measurement caused by said pressure differential across the drill bit.

3,968,474

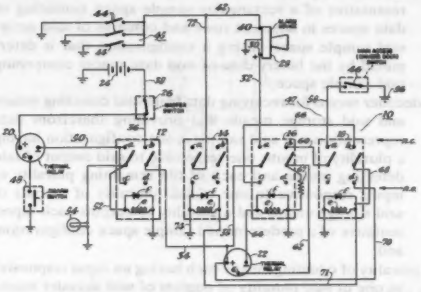
ALARM SYSTEM HAVING DELAY CHARACTERISTIC

David W. Danahey, 128 E. Neshannock Ave., New Wilmington, Pa. 16142

Filed July 3, 1974, Ser. No. 485,329

Int. Cl.[2] B60R *25/10*; G08B *19/00*

U.S. Cl. 340—63 **14 Claims**



1. An alarm system for indicating unauthorized use or entry of a facility protected thereby, said facility having access means and a source of electric potential, said alarm system comprising an alarm device, first switching means including a circuit path coupled between said source and said alarm device, second switching means having a normally conductive first circuit path coupled between said source and said alarm device for supplying an energizing potential to said alarm device for arming said alarm system, a time delay circuit including delay actuating means, sensing means sensitive to opening of said access means, a normally conductive second circuit path through said second switching means and a normally conductive circuit path through third switching means connected in series between said delay actuating means and said sensing means, said time delay circuit when actuated energizing said second switching means to interrupt said second switching means first path for temporarily disarming said alarm device during an actuated interval of said time delay circuit for a predetermined delay period.

3,968,475

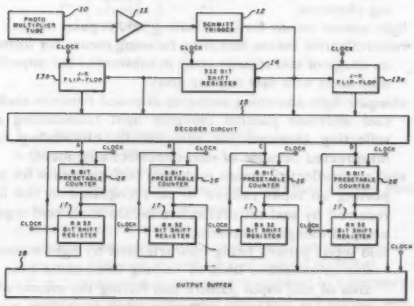
DIGITAL PROCESSOR FOR EXTRACTING DATA FROM A BINARY IMAGE

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,666

Int. Cl.[2] G06K *9/12*

U.S. Cl. 340—146.3 E **7 Claims**



1. A digital processor for extracting data from an image contained within an array of binary data spaces comprising:

means for detecting data contained in each of said binary data spaces and for providing an output representative thereof;

means for storing binary data having an input responsive to said output of said detecting means and providing a plurality of outputs each of which is representative of the binary data in one of said binary data spaces, said outputs and said output of said detecting means collectively representative of a rectangular sample space consisting of data spaces in adjacent rows and columns of said array, said sample space having a configuration that is determined by the binary data of said data spaces comprising said sample space;

decoder means for receiving data from said detecting means and said storage means and providing therefrom data representative of said sample space configuration having a plurality of inputs, one responsive to said output of said detecting means and each of the remaining plurality of inputs responsive to one of said plurality of outputs of said storage means and a plurality of outputs each representative of a predetermined sample space configuration; and

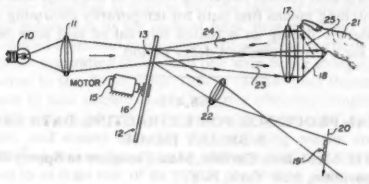
plurality of counting means each having an input responsive to one of said plurality of outputs of said decoder means for providing a count of each of said predetermined sample space configuration contained within a predetermined multiplicity of sample spaces, said multiplicity of sample spaces forming a sample area consisting of a predetermined sub-array of data spaces.

3,968,476

SPURIOUS SIGNAL REMOVAL IN OPTICAL PROCESSOR FINGERPRINT IDENTIFICATION APPARATUS

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 17, 1974, Ser. No. 489,212
Int. Cl.² G06K 9/13
U.S. Cl. 340—146.3 E **5 Claims**



1. In pattern recognition apparatus:

rotatable support means having a regular array of alternating parallel elongate spaced light transmitting and reflecting elements,

light source means for illuminating said regular array,

retroreflective means including focusing means for forming an image of said regular array in substantial but imperfect alignment with said regular array,

elongate light absorbing elements disposed between each of said alternate parallel elongate light transmitting and reflecting elements for substantially eliminating light misdirected because of said imperfect alignment,

said retroreflective means including surface means for supporting an input pattern to be recognized in the light received by said retroreflective means from said regular array of elongate elements,

said input pattern being characterized by light transmissive or reflective lines of varying orientation over the area of said input pattern and having the effect, when present at said input pattern supporting surface means and when said rotatable means is rotating, of variably diffracting light from said image of said regular array onto said regular array, and

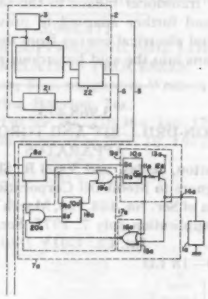
signal processing means responsive to the position of said rotatable support means and to said variably diffracted light directed by said regular array for determining the angular orientation of said rotatable support means with respect to a reference position thereof at the instants of extremum values of light intensity of said variably diffracted light.

3,968,477

CONTROL APPARATUS FOR ELECTRICAL DEVICES

Shizuo Sumida; Kazuo Nii, both of Hiroshima; Osamu Shimizu, Himeji; Atsushi Ueda, Himeji, and Mitsuaki Ishii, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Toyo Kogyo Co., Ltd., both of, Japan

Filed July 29, 1974, Ser. No. 492,724
Claims priority, application Japan, July 27, 1973, 48-84740
Int. Cl.² H04Q 9/16
U.S. Cl. 340—167 R **5 Claims**



1. A control apparatus for controlling a plurality of electrical devices comprising:

a plurality of electrical devices,

a central operation device for generating a plurality of control signals for controlling the electrical devices, the plurality of control signals comprising a first signal for driving a first electrical device and a second signal delayed in time from the first signal to permit discontinuance of the driving of the first electrical device if a high current is detected passing therethrough,

a terminal operation device for each electrical device,

a signal transmission line for transmitting the plurality of control signals from the central operation device to the terminal operation devices,

a first terminal operation device for driving the first electrical device comprising:

a signal division circuit for dividing from the plurality of control signals said first and second signals,

a driving circuit connected to the signal division circuit for driving the first electrical device in response to said first signal,

a state detecting circuit for detecting a high current in the first electrical device,

a state signal generating circuit connected to the state detecting circuit, the signal division circuit and the driving circuit for deactivating the driving circuit to discontinue the driving of the first electrical device only upon receipt of a signal from the state detecting circuit indicating high current in the first electrical device and receipt at the same time of said second signal,

said second signal being delayed in time from said first signal so that high transient starting current in the first electrical device has subsided by the time of said second signal so that driving of the first electrical device will be discontinued when high current is present therein with

the exception of the presence of high transient starting current.

3,968,478

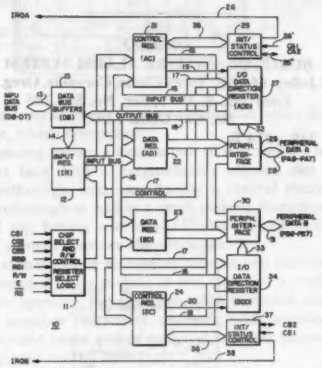
CHIP TOPOGRAPHY FOR MOS INTERFACE CIRCUIT

William D. Mensch, Jr., Mesa, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 30, 1974, Ser. No. 519,148

Int. Cl.² G06F *13/00;* **H01L** *25/00*

U.S. Cl. 340—172.5 **8 Claims**



1. An MOS peripheral interface adaptor chip comprising:

peripheral interface circuitry on a surface of said MOS peripheral interface adaptor chip adapted to be coupled to external peripheral devices by means of an external bidirectional peripheral data bus for sending data to and receiving data from said external peripheral devices;

data bus interface circuitry on said surface adapted to be coupled to an external bidirectional data bus of a data processing system for receiving data from and sending data to said data processing system;

register circuitry means on said surface coupled to said data bus interface circuitry for receiving data from said data bus interface circuitry for controlling a direction of data on a conductor of said external bidirectional peripheral data bus independently of the direction of data on another conductor of said external bidirectional peripheral data bus; and

said data bus interface circuitry including data input-output circuits disposed along a first edge of said MOS peripheral interface adaptor chip, said peripheral interface circuitry including buffer circuits disposed along second and third edges of said MOS peripheral interface adaptor chip, and said third edge of said chip being opposite said first edge, said register circuitry being disposed substantially between said data bus interface circuitry and said peripheral interface circuitry.

3,968,479

COMPLEMENTARY STORAGE ELEMENT

Karl Goser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

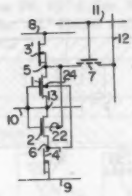
Filed Nov. 29, 1974, Ser. No. 528,094

Claims priority, application Germany, Dec. 6, 1973, 2360887

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 FF **6 Claims**

1. A complementary storage element comprising first and second FET switching inverters and a FET selector element, said FET inverters being complementary to each other, first and second load elements, a pair of voltage supply lines, said FET inverters and said elements being serially connected with one end of said first load element connected to one of said voltage supply lines and with its other end connected to the drain terminal of said first FET inverter, with the source terminals of said FET inverters connected together, and with one end of said second load element connected to the other of said voltage supply lines and the other end connected to the drain terminal of said second FET inverter, there being a first junction point between said first load element and said first FET inverter and a second junction point between said second load element and said second FET inverter, a digit line, a word line, said FET selector element being connected to one of said junction points and to said digit line, the gate terminal of said FET selector being connected to said word line, the gate terminal of said second FET inverter being connected to said first junction point and the gate terminal of said first FET inverter being connected to said second junction point.



3,968,480

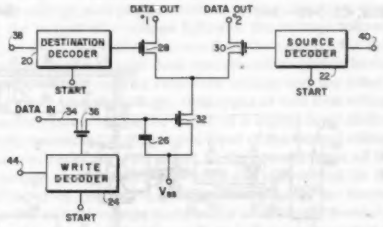
MEMORY CELL

Jeffrey P. Stein, Hatfield, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 463,895, April 25, 1974, abandoned. This application Mar. 20, 1975, Ser. No. 560,217

Int. Cl.² G11C *13/00, 11/40*

U.S. Cl. 340—173 FF **10 Claims**



1. A memory system comprising:

a data storage element,

a first output terminal,

a first readout means connecting said data storage element to said first output terminal,

a second output terminal,

a second readout means concurrently connecting said data storage element to said second output terminal,

a first decoder means arranged to respond to a memory read operation to energize said first read out means, and,

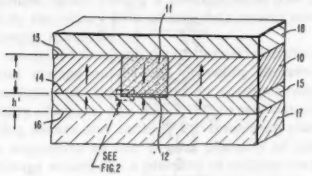
a second decoder arranged to respond to a memory read operation to concurrently energize said second readout means.

3,968,481

METHOD OF, AND APPARATUS FOR, ESTABLISHING SELF-BIASED SINGLE WALL DOMAINS

Philip J. Grundy, Sale, England, and Yeong S. Lin, Mount Kisco, N.Y., assignors to International Business Machines (IBM), Armonk, N.Y.

Filed July 25, 1974, Ser. No. 491,918
Int. Cl.[2] G11C *11/15*
U.S. Cl. 340—174 TF **19 Claims**



6. A self-biased single wall domain supporting structure comprising,

a substrate,

a storage layer of magnetic material with thickness *h* and material length *l*, capable of supporting stable single wall domains in a suitable external field,

and a bias layer of uniaxial magnetic material exchange coupled to said storage layer of thickness *h'* and material length *l'* where *h'* is sufficiently small to maintain a single domain state and $h'/l' < h/l$,

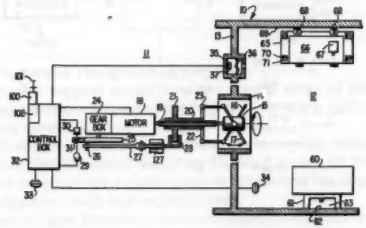
whereby said bias layer provides magnetic forces simulating said external field.

3,968,482

PRESSURE MODULATED ALARM SYSTEM

Mark Schuman, 101 G St. Southwest, Washington, D.C. 20024

Continuation-in-part of Ser. No. 360,049, May 14, 1973, abandoned, which is a continuation-in-part of Ser. No. 213,994, Dec. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 141,171, May 7, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,511
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—240 **54 Claims**



1. In an enclosure having at least one boundary region defining at least one bounded region, a monitoring system for detecting movement of, or substantial opening of, an object within said enclosure and forming at least a portion of said boundary region, such as furniture, appliances, closets or the like; comprising:

means for inducing a predetermined variation in pressure with respect to time within at least one bounded region of said enclosure;

means including a portion of said boundary region defining a chamber which is normally substantially closed off from communication with said bounded region, said chamber being defined at least in part by said object; and

pressure sensing means operatively located in said chamber;

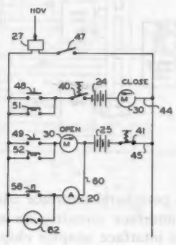
wherein the movement or opening of the object causes a substantial opening of said chamber such that communication of said chamber with the bounded region is substantially increased, the increased communication causing a substantial increase in penetration of the pressure variation into said chamber, whereby said pressure sensing means senses the increased penetration of the induced pressure variation into said chamber thereby detecting the movement or opening of said object.

3,968,483

BURGLAR AND FIRE ALARM SYSTEM

Leonard Jolley, 665 SE. Terra Circle, Corvallis, Oreg. 97330

Filed Jan. 8, 1975, Ser. No. 539,295
Int. Cl.[2] G08B *13/08*
U.S. Cl. 340—274 R **9 Claims**



1. In a burglar alarm system adapted for use with an entrance door of a building, and with said door including a door-locking system including a door handle-operated latch movable between retracted and extended positions between said door and an adjacent wall of said building, and a door bolt slidable between a retracted position and an extended locking position between said door and said wall,

said alarm system including:

electrically operated alarm means connected in an electrical alarm circuit,

reversible electric motor means, connected in an electrical motor circuit means,

drive means interconnecting said motor means and said bolt for sliding said bolt between said extended and retracted bolt positions,

limit switch means for deactivating said motor means and limiting sliding movement of said bolt in opposite directions,

switch means accessible from inside said building including master switch means for energizing said system and motor switch means in said motor circuit means for operating said motor means in a selected direction to slide said bolt,

door latch-operated switch means in said alarm circuit operable with said latch retracted, said bolt extended, and said master switch means closed to energize said alarm means and operable with said latch extended to de-energize said alarm means,

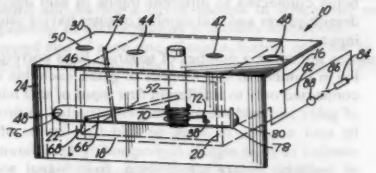
and hidden switch means embedded at a secret location on or adjacent said building and operable by an actuator means directed toward said switch means from outside said building, said hidden switch means being in said motor circuit means in parallel with said motor switch means for operating said motor means and sliding said bolt between its extended and retracted positions.

3,968,484

SPRING-ACTUATED SECURITY ALARM FOR A DOOR

Frank X. Weber, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 19, 1975, Ser. No. 559,966
Int. Cl.² G08B 13/08
U.S. Cl. 340—274 R 5 Claims



1. A security alarm device in combination with a door frame and door, which comprises:

a. a housing having a base, a pair of end walls, a top, and a front face with a longitudinally aligned slot aperture therethrough, said base having a central threaded hole therethrough as well as a small pinhole therethrough, and said top having a central circular-shaped therethrough and a small aperture therethrough;

b. a rod member of electrically conductive material having a threaded outer surface at one end, and a central transverse aperture therethrough, said threaded end of said rod member threadably engaging said threaded central hole, said other end of said rod member adapted to engage said central opening;

c. an elongated bar member of electrically conductive material having a pair of ends, one said end of said bar member affixed in said central transverse aperture, and the other end of said bar member protruding through said slot aperture adapted to engage said door, said bar member rotating in said slot aperture as said rod member rotates;

d. a mounting plate affixed onto said housing adapted to be mounted onto said door frame;

e. means tending to rotate said rod member and said attached bar member;

f. means for restricting rotation of said bar member; and

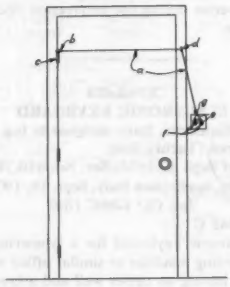
g. an electrical series circuit consisting of said rod member, said bar member, a power source, an alarm, and a contact point cooperating with said bar member.

3,968,485

BURGLAR WARNING DEVICE

Harry I. DeHart, P.O. Box 508, Radford, Va. 24141

Filed July 2, 1975, Ser. No. 572,412
Int. Cl.² G08B 13/08
U.S. Cl. 340—274 R 5 Claims



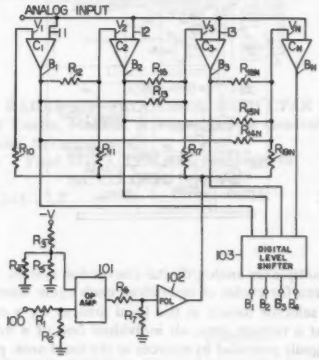
1. A burglar warning device to be installed across a doorway or the like and activated by the opening of the door comprising in combination a cord or line to be stretched across the doorway, means at one end of the cord for securing to a fixed position on said doorway, means at the other end for loosely engaging a light control switch, and means for directing the line in a vertically downward direction to assure an upward pull on said switch.

3,968,486

ANALOG TO DIGITAL CONVERTER

Richard C. Gerdes, 7333 E. 34th St., Tucson, Ariz. 85710

Filed June 20, 1974, Ser. No. 481,158
Int. Cl.² H03K 13/175
U.S. Cl. 340—347 AD 2 Claims

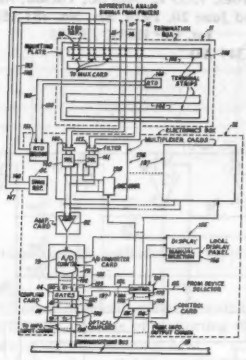


1. An analog to digital converter of the asynchronous type comprising first, second, third, and fourth voltage comparators having two voltage inputs whose voltages are compared and a voltage output, a first input to each said comparators being the input analog voltage, the second input to the first voltage comparator resistively connected to a pre-determined reference voltage; said pre-determined reference voltage comprising the output of a voltage follower, the voltage follower having an input operably connected to the output of a dual operational amplifier, said dual operational amplifier having two inputs, one an exterior reference voltage and the other a negative power supply voltage; the output of said first voltage comparator connected to the input of a digital level shifter, resistively connected to the second input of the second voltage comparator, resistably connected to the second input of the third voltage comparator, and resistably connected to the second input of the fourth voltage comparator; the second input to the second voltage comparator additionally resistably connected to the output of the voltage follower; the output of the second voltage comparator operably connected to the input of the digital level shifter, resistably connected to the second input of the third voltage comparator, and resistably connected to the second input of the fourth voltage comparator; the second input of the third voltage comparator additionally resistably connected to the output of the voltage follower; the output of said third voltage comparator operably connected to the input of the digital level shifter, and resistably connected to the second input of the fourth voltage comparator; said fourth voltage comparator second input additionally resistably connected to the output of the voltage follower and the output of the fourth voltage comparator operably connected to the input of the digital level shifter, wherein the output of the digital level shifter comprise the digital outputs of the analog to digital converter.

3,968,487
MULTIPLEXER-ANALOG/DIGITAL CONVERSION SYSTEM

William M. Herring, Elburn, and Dennis B. Walling, Darien, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 15, 1974, Ser. No. 514,495
Int. Cl.[2] G06F *3/00*
U.S. Cl. 340—347 AD 17 Claims



1. A multiplexer analog/digital conversion system, useful at a local area for cycles of operation, each cycle interrogating by local selector means at the local area or by a computer located at a remote area, an individual one of a number of analog signals provided by sources at the local area, providing an analog/digital conversion of the analog signal selected during each cycle at the local area, and locally displaying the multi-bit binary information from the conversion, when there is a local selection of the analog signal, or providing that information to a communications bus connecting the system and the computer, when there is a computer selection of the analog signal, which comprises:

a number of switch means, each connectable to a different source of analog signal at the local area and each switch means being responsive to a signal to provide an output signal corresponding to the analog signal;

analog/digital converter means including an analog/digital converter having a number of outputs to provide mutli-bit binary information, input means to receive an analog signal, and a trigger input to receive a pulse that at the leading edge of the pulse resets said converter and at the trailing edge of the pulse initiates a conversion operation for a short period of time to provide at said number of outputs multi-bit binary information representative of the analog signal at said input means, and a status output to provide a pulse during the conversion operation of said analog/digital converter, said input means of said converter being connected to each said number of switch means to receive from the signalled switch means an analog signal, during one cycle of operation of the system, for a conversion of that signal, in response to a pulse to said trigger input of said converter, to provide at said a number of outputs of said converter multi-bit binary information representative of the analog signal from the signalled switch means; and

logic means including:

selector means having a decoder/demultiplexer that is responsive to a multi-bit binary information at a number of inputs of said decoder/demultiplexer to provide at one of its number of mutually exclusive outputs a signal, that output being dependent upon that binary information, said decoder/demultiplexer having said number of outputs connected to different switch means of said number of switch means to provide a signal to one of them in accordance with the binary information received by said number of inputs of said decoder/-demultiplexer;

gate means comprising a number of gates and an additional gate, each having a first input and a second input and an output, said outputs of said number of gates being connected to different inputs of said decoder/-demultiplexer and said number of gates having said first inputs;

means including a number of separate lines corresponding in number to said number of gates, each line being connected only to a different first input of said number of gates and said means being constructed to provide, by said number of lines, to said first inputs of said number of gates signals corresponding to different bits of multi-bit binary information, from signal sources connectable to said number of lines, corresponding, during one cycle of operation, to that information identifying the switch means selected for operation;

means including a line connected to said first input of said additional gate and connectable to a pulse source to provide a pulse to said first input of said additional gate during an early part of the cycle of operation of the system;

means including a line connected to each of said second inputs of said number of gates and said additional gate, said means being connectable to a signal source to provide to these second inputs of said number of gates and said additional gate of said gate means a signal for the period of the cycle of operation of the system to open said additional gate, and to open said number of gates to provide to said decoder/demultiplexer, from said outputs of said number of gates, signals corresponding to the multi-bit binary information provided at said first inputs of said number of gates and to provide a pulse at said output of said additional gate when a pulse is applied to said line connected to said first input of said additional gate; and

a monostable multivibrator having an input and an output, said input being connected to said output of said additional gate to receive said pulse from the output of said additional gate to provide at its output a pulse for a predetermined period beginning at the trailing edge of the pulse from said additional gate, said output of said multivibrator being connected to said trigger input of said converter to provide that pulse from said output of said multivibrator to said convertor to reset said converter at the leading edge of said pulse and to initiate at the trailing edge of said pulse from said multivibrator the operation of said converter for a period of time, within the cycle of operation of the system, for the analog/digital conversion to provide the multi-bit binary information to said number of outputs of said converter and to provide a pulse at the status output of said converter during the conversion operation of said converter.

3,968,488
ELECTRONIC KEYBOARD

Michele Bovio, Banchette, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

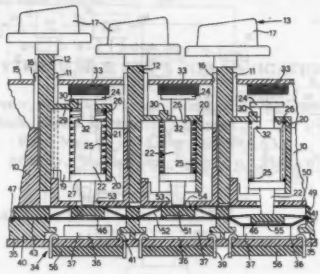
Filed Sept. 5, 1975, Ser. No. 610,700
Claims priority, application Italy, Sept. 18, 1974, 69815/74
Int. Cl.[2] G08C *1/00*
U.S. Cl. 340—365 C 12 Claims

1. In an electronic keyboard for a typewriter, calculating machine, accounting machine or similar office machine, comprising a frame having an upper wall and a lower wall which defere a space therebetween, said frame having a plurality of slot means, a plurality of depressable keys, each one comprising a stem lodged in one corresponding of said slot means, a

plurality of actuators individually associated to said keys, and a plurality of circuit means comprising each one a capacitor having a fixed armature and a movable armature opposite to said fixed armature, each actuator including an elongated member having a first end for actuating the movable armature of the corresponding capacitor to generate corresponding electrical signals, the combination comprising:

a supporting member putting out from each one of said stems and having a cavity therein in which one corresponding of said actuators is slidably supported;

a second end of each one of said actuators opposite to said first end and supporting a ferromagnetic element thereon;



magnetic retaining means lodged in said space and supported by said upper wall to hold the second end of the elongated member in a rest position of said actuator;

a first and a second shoulder element adjacent to the first and respectively to the second end of said elongated member; and

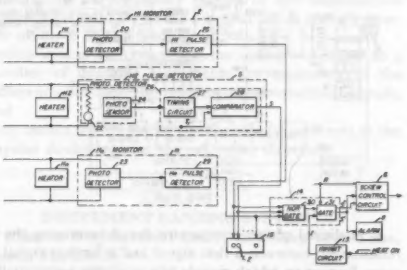
a plurality of helicoidal springs each one lodged in said cavity to surround said elongated member and compressed between said first shoulder element and an internal surface of said cavity to arrest said second shoulder against said supporting member to push the first end of said actuator toward said movable armature when the ferromagnetic element of said actuator releases said magnetic retaining means upon the depression of said keys.

3,968,489

APPARATUS FOR MONITORING THE OPERATION OF HEATER CONTROLLERS

James J. Richards, and Francis A. Russell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 15, 1974, Ser. No. 443,066
Int. Cl.² G08B *21/00*
U.S. Cl. 340—417 **5 Claims**



1. In combination:

a heater;

temperature sensing means for measuring the temperature of a material heated by said heater;

a controller responsive to said temperature sensing means for sequentially generating heater signals that periodically activate said heater;

means actuated by said heater signals for monitoring the rate at which said heater signals are generated, said means comprising:

illumination means actuated by said heater signals for generating light pulses;

a photosensor for converting the light pulses into corresponding electrical signals, and

a timing circuit responsive to each of said electrical signals for establishing the rate of electrical signal generation;

means responsive to the monitored rate for generating an output signal when said monitored rate is less than a selected rate; and

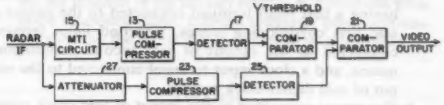
an alarm responsive to said output signal for signalling the occurrence of improper controller operation.

3,968,490

RADAR MTI PROCESSOR WITH CFAR

Judson J. Gostin, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed May 3, 1974, Ser. No. 466,730
Int. Cl.² G01S *7/30, 9/42*
U.S. Cl. 343—7.7 **3 Claims**



1. For use with a pulse doppler radar, a received signal processor affording MTI operation and CFAR capability comprising:

a. MTI cancellation circuit means having said received signals applied thereto and providing an MTI signal of level in accordance with a first predetermined gain factor (α) at the MTI cancellation frequency and of substantially higher level at frequencies displaced therefrom;

b. blanking circuit means having said received signals applied thereto and providing a blanking signal of level in accordance with a second predetermined gain factor (β) which is substantially uniform with frequency, the magnitude of β being significantly greater than that of α;

c. pulse compression means and video detection means having applied thereto said MTI and blanking signals, and providing MTI video and blanking video signals by compression and detection of signals from said cancellation circuit and said blanking circuit means respectively;

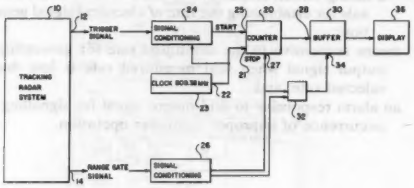
d. first threshold means connected to receive at least the MTI video signal from said detection means and operative to pass only such thereof as exceeds a first threshold; and

e. second threshold means connected to receive said MTI video signal and operative to pass only such thereof as exceeds said blanking video signal as a second threshold, whereby false alarms which might otherwise result from high clutter levels in said MTI video signal are prevented by the correspondingly high levels of said blanking video signal applied as said second threshold.

3,968,491
RADAR RANGEMETER

Jeffrey L. Silberberg, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1974, Ser. No. 526,998
Int. Cl.² G01S *9/04, 9/06*
U.S. Cl. 343—12 R **3 Claims**



1. A range determining and display circuit for use with reflected energy ranging systems producing a first signal upon the occurence of transmission of a detection signal and a second signal upon the return target reflection comprising:

first conditioning means for receiving said first signal;

second conditioning means for receiving said second signal;

digital clock means for generating timing signals spaced apart in time at intervals corresponding to the propagation time necessary for said detection signal to travel twice the distance of the lowest discrete range distance to be displayed, said timing signals being coupled to said first conditioning means as an input;

digital counting means for counting said timing signals, having a first input terminal connected to the output of said first conditioning means, a second input terminal connected to the output of said second conditioning means, and a clock input terminal connected to the output of said digital clock means;

buffer means connected to the output of said clock means for storing a selected output signal from said counting means; and

digital display means connected to the output of said buffer means for displaying in numerical format the corresponding decimal value of said stored selected counting means output signal stored in said buffer means;

whereby said first signal enables said counting means to begin counting said timing signals, and said second signal dis-enables said counting means thereby causing the range of said target to be displayed directly in digital numerical format.

3,968,492
ADAPTIVE PARAMETER PROCESSOR FOR CONTINUOUS WAVE RADAR RANGING SYSTEMS

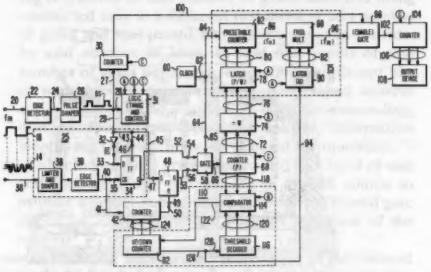
Gerald Stanley Kaplan, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,558
Claims priority, application United Kingdom, Mar. 18, 1974, 12006/74
Int. Cl.² G01S *9/24*
U.S. Cl. 343—14 **9 Claims**

1. In a continuous wave radar ranging system, wherein a signal is transmitted in the direction of a target and is reflected from said target back to the source of said transmitted signal, said transmitted signal being frequency modulated in accordance with a given periodic waveform, said ranging system including means for deriving from said transmitted signal and said reflected signal a difference signal indicative of the frequency difference of said reflected signal from the instantaneous frequency of said transmitted signal, a signal processor comprising:

a. blanking means, receptive of signals indicative of said modultion waveform, for generating a train of blanking pulses in synchronism with the extrema of said modulation waveform; said blanking pulses having a width at least as great as the duration of any phase reversal region in said difference signal;

b. zero crossing detector means, responsive to said blanking pulses and a signal indicative of a variable number and receptive of said difference signal for generating signals indicative of zero crossings in said difference signal occurring respectively a predetermined number and said



variable number of zero crossings after a blanking pulse, said variable number being determined from the last range measurement of said target;

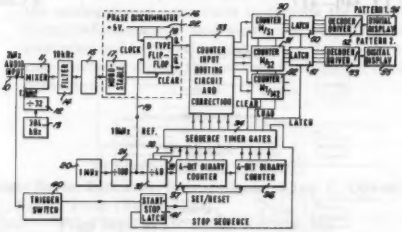
c. accumulator means, responsive to said predetermined and variable number zero crossing signals, for producing a signal indicative of the duration of the time period between the respective occurrence of said predetermined number zero crossing and said variable number zero crossing; and

d. conversion means, receptive of said duration signal, for deriving from said duration the range of said target and producing a signal indicative of said range.

3,968,493
DIGITAL PHASE COMPARATORS

James David Last, Llanfairfechan, and Emyr Wyn Roberts, Bangor, both of Wales, assignors to University of North Wales, Caernarvon, Wales

Filed Sept. 18, 1974, Ser. No. 507,185
Claims priority, application United Kingdom, Sept. 19, 1973, 44018/73
Int. Cl.² G01S *1/30*; G01R *25/00*
U.S. Cl. 343—105 R **9 Claims**



1. A digital phase comparator for determining the phase relationship between a first signal and a further signal of the same frequency which signals are available sequentially in a regular cyclic sequence comprising a reference oscillator of a frequency equal to or approximately equal to the frequency of said signals, digital phase determining means arranged to determine the phase relationships between a signal from the reference oscillator and each of the first and the further sig-

nals and including subtracting means arranged to determine the difference between these two phase relationships, means arranged to determine the rate of phase change between the first signal and the reference signal, and correction means utilising the rate information as a measure of the rate of phase change of the reference signal to correct the phase difference determination between the further signal and the reference signal in accordance with this rate and the time period between the determinations of the phase relationships between the first signal with respect to the reference and the further signal with respect to the reference signal for any change in the phase of the reference signal with respect to the first signal during that time period.

3,968,494

ANALYZER DEVICE FOR A VOR NAVIGATIONAL RECEIVER

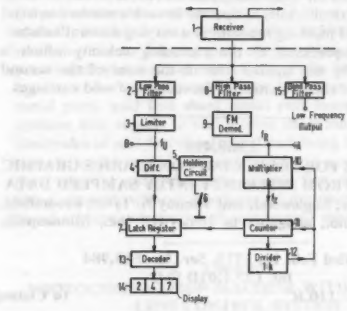
Walter Freter, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 5, 1975, Ser. No. 574,633

Claims priority, application Germany, May 6, 1974, 2421772

Int. Cl.² G01S *1/44*

U.S. Cl. 343—106 R **13 Claims**



1. In a VOR receiver which receives VOR signals including a reference phase in the form of a frequency modulation and a rotational phase in the form of an amplitude modulation, a first receiver section providing the reference phase as a demodulated reference signal, a second receiver section providing an amplitude demodulated rotating signal, and means for comparing the reference and rotational signals to obtain angular information in the azimuthal plane including an analyzer device comprising:

a frequency multiplier in one of said receiver sections for multiplying the frequency of one of the demodulated signals by a factor *k*, where *k* is selected as a whole number multiple or as a fraction of 360;

counting means for converting the multiplied signal to a number of counting increments corresponding to the difference between the reference and rotational signals; and

display means for displaying the counting increments as the angular deviation from the reference direction.

3,968,495

INSTRUMENT LANDING SYSTEM

Rudolf Clemens Hergenrother, Rte. 2, 45 Hidden River Lane, Sarasota, Fla. 33870

Filed Mar. 6, 1975, Ser. No. 555,967

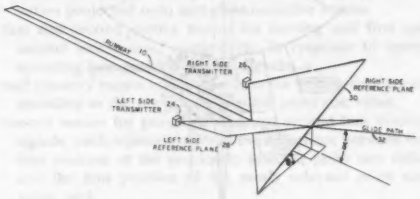
Int. Cl.² G01S *1/16, 1/18*

U.S. Cl. 343—108 R **5 Claims**

1. An aircraft instrument landing system for use on an aircraft runway to guide approaching aircraft along a glide path comprising in combination:

a. first and second directional transmitters to be disposed on the left and right sides of a runway for transmitting directional radio signals in two reference planes at angles to the horizontal which will intersect to define a glide path including a high frequency oscillator complex for supplying a high frequency output carrier signal from each transmitter and modulator means for each transmitter supplying a pair of modulation signals for each transmitter which are different and identifiable;

b. receiver means on the aircraft disposed to receive said carrier signals and including narrow band pass filter



means for separating the four identifiable modulation signals;

c. detector means coupled to said filter means including resistor divider means to adjust the intensity of said signals and means to add and subtract the received signals; and,

d. display means coupled to said detector means and resistor divider means including indicator means visibly showing the position of the aircraft relative to a phantom glide slope reference plane, azimuth reference plane and visibly showing the signal displacement from said planes.

3,968,496

STABILIZED ANTENNA PLATFORM

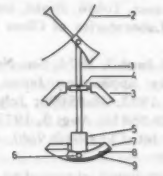
Geir Brunvoll, Slattum, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1975, Ser. No. 555,226

Claims priority, application Norway, Mar. 4, 1974, 731/74

Int. Cl.² H01Q *1/18*

U.S. Cl. 343—765 **7 Claims**



1. A stabilized antenna platform wherein there is provided an antenna dish having elevation and azimuth control means, as well as counterweight means, said antenna platform mounted upon an antenna mounting shaft, said antenna mounting shaft supported by a universal joint bearing, comprising:

at least one closed container symmetrically arranged around said mounting shaft containing a liquid and provided with internal liquid flow damping means, said closed container forming a small mass system mechanically coupled to said platform for damping the movements of said antenna platform.

3,968,497

ANTENNA WITH A PERISCOPE ARRANGEMENT

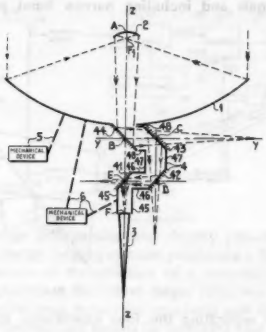
Nhu Bui Hai, Paris, France, assignor to Thomas-CSF, Paris, France

Filed Mar. 14, 1975, Ser. No. 558,545

Claims priority, application France, Mar. 19, 1974, 74.09212

Int. Cl.² H01Q 19/14

U.S. Cl. 343—781 CA 6 Claims



1. An antenna comprising, in series, for defining a radiation path: a primary source, a periscope arrangement with n (n being a positive integer) successive mirrors, said n mirrors being successively arranged along said path and being all plane mirrors, an auxiliary reflector having first and second foci, the distance between said first focus and the auxiliary reflector being smaller than the distance between said second focus and the auxiliary reflector, and a main reflector having a reflecting face; said main reflector being physically located between said auxiliary reflector and said periscope arrangement; said first and second foci being respectively located in front of and behind the reflecting face of said main reflector and said distance between said second focus and said auxiliary reflector being substantially equal to the length of that part of said radiation path which is comprised between said auxiliary reflector and said primary source.

3,968,498

X-Y PLOTTER INCORPORATING NON-IMPACT, LIQUID JET RECORDING INSTRUMENT

Tadamitsu Uchiyama, Tokyo, Japan, assignor to Research and Development Laboratories of Ohno Co., Ltd., Yokohama, Japan

Filed June 3, 1974, Ser. No. 476,109

Claims priority, application Japan, July 27, 1973, 48-85093; July 27, 1973, 48-85096; July 30, 1973, 48-85677; July 31, 1973, 48-86024; Aug. 3, 1973, 48-87265

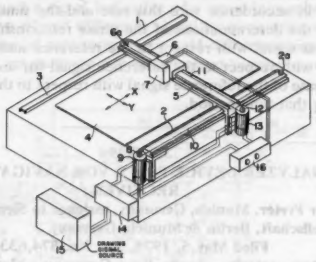
Int. Cl.² G01D 9/40, 15/18

U.S. Cl. 346—29 19 Claims

1. A non-impact, liquid jet recording apparatus for use in an X-Y plotter of a type which comprises a support table adapted to support a recording medium thereon, an X-axis carriage mounted for parallel movement across said support table in the direction of the X-ordinate, a Y-axis carriage mounted on said X-axis carriage for movement in the direction of the Y-ordinate, a first drive unit for moving said X-axis carriage and a second drive unit for moving said Y-axis carriage, said apparatus comprising:

a recording head rigidly carried by said Y-axis carriage and including a nozzle through which a liquid marking medium is jetted onto the recording medium, means for supplying said liquid marking medium to the exit of said nozzle, and an electrode member spaced from the exit of said nozzle and situated above said recording medium;

electrical means coupled to said electrode and said nozzle for applying a potential between said nozzle and said electrode member for establishing therebetween an electrostatic field required to attract said liquid marking medium from the exit of said nozzle; and



circuit means for controlling said electrical means to cause said electrical means to operate in such a manner as to jet said liquid marking medium in a varying amount substantially proportional to the recording velocity which is defined by the square root of the sum of the second powers of the velocities of movement of said carriages.

3,968,499

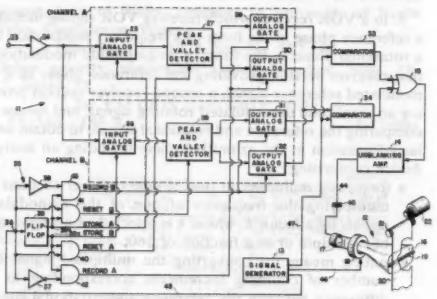
APPARATUS FOR PRODUCING CONTINUOUS GRAPHIC DISPLAYS FROM INTERMITTANTLY SAMPLED DATA

Peter R. Lowe, Englewood, and Tommy N. Tyler, Broomfield, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 19, 1975, Ser. No. 550,984

Int. Cl.² G01D 9/42

U.S. Cl. 346—110 R 14 Claims



1. Apparatus for producing a graphic display of the variations in amplitude of a data signal, comprising

first means connected to the source of the signal for deriving in successive periods two values, representing, respectively, the minimum value and the maximum value of said signal in each of said periods, and

second means connected to said first means for producing successive parallel line segments on a display medium during successive ones of said periods, each of said line segments being continuous and extending between two points, the positions of which represent, respectively, the minimum value and the maximum value of said signal derived during a previous one of said periods.

3,968,500

ELECTRODE PRINTING HEAD AND METHOD FOR MAKING THE SAME

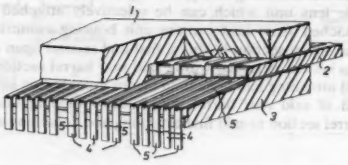
Gerhard Meisel, Ulm (Danube); Helmut Süssenbach, Thalfingen, and Harry Zimmermann, Oberelchingen, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 24, 1974, Ser. No. 508,868

Claims priority, application Germany, Sept. 27, 1973, 2348556

Int. Cl.² G01D *15/08*

U.S. Cl. 346—139 C **5 Claims**



1. In an electrode printing head having a plurality of strip-shaped electrodes arranged in a row in a juxtapositioned, mutually insulated, spaced relationship and being supported in insulating means forming part of the printing head, the improvement wherein said row of electrodes being constituted by electrodes of identically shaped first and second sheet metal parts, said first sheet metal part being in a reversed position with respect to said second sheet metal part and the electrodes of said first sheet metal part being in an intermeshing relationship with the electrodes of said second sheet metal part, whereby each electrode of said first sheet metal part being situated, without touching, in the space provided between adjacent electrodes of said second sheet metal part.

3,968,501

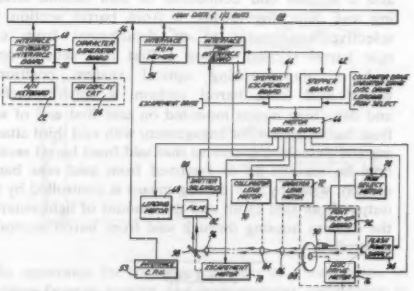
PHOTOCOMPOSITION MACHINE WITH IMPROVED LENS CONTROL SYSTEM

Barry D. Gilbert, Succasunna, N.J., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Nov. 14, 1974, Ser. No. 523,557

Int. Cl.² G03B *15/00*

U.S. Cl. 354—7 **8 Claims**



1. A photocomposition machine comprising:

input peripheral means for providing data representative of selected input commands, values and type characters, said input commands including point size commands for specified type characters within a type line,

memory means for storing entered data,

input/output means for entering and reading from said memory means data including said point size command and associated value data provided from said input peripheral means,

means for storing an optically accessible plurality of predetermined type characters,

photosensitive means for recording selected type characters,

controllable flash means in operative relationship with said character storage means for exposing said photosensitive means with images of selected characters of said character storage means,

controllable optical means for projecting said selected characters in the form of images onto said photosensitive means and including first and second movable lens means for determining the image size of the selected type characters projected onto said photosensitive means,

first and second motive means for moving said first and second lens means, respectively, in response to corresponding lens position control signals,

said memory means including means for storing data corresponding to the previously selected point size value,

control means for providing first and second lens control signals, each representative of the difference between the lens position of the previously selected point size value and the lens position of the newly selected point size value, and

said first and second motive means moving said first and second lens means respectively to corresponding new positions in response to said corresponding lens position control signals.

3,968,502

ELECTRIC SHUTTER CIRCUIT

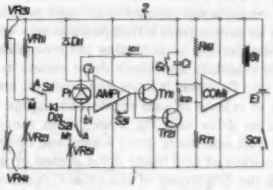
Kazuo Shiozawa, Hachioji, and Junji Kajiwara, Kadoma, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,174

Claims priority, application Japan, July 26, 1973, 48-83667; Nov. 12, 1973, 48-126334

Int. Cl.² G03B *7/08*

U.S. Cl. 354—24 **10 Claims**



1. An electric shutter circuit with means for setting the exposure time automatically as well as manually, comprising a differential amplifier, a photoelectric element, a negative feedback circuit connected between the output and one of the inputs of said differential amplifier, a first manually variable bias voltage source indicative of the aperture setting, a second manually variable bias voltage source indicative of the exposure time setting, change-over switch means for connecting said first bias voltage source to the other input of said differential amplifier and said photoelectric element across both inputs of said differential amplifier and alternatively for disconnecting said photoelectric element and connecting said second bias voltage source to said other input of said differential amplifier, converter means interconnected with said differential amplifier for causing the current in said feedback circuit to be an exponential function of the output of said second bias voltage source, control means for producing a charging current approximately proportional to the current in said feedback circuit, a capacitive circuit connected to be charged by said charging current, shunt switch means for keeping said capacitive circuit discharged until released, means for releas-

ing said shunt switch means when the shutter is opened to begin the charging of said capacitive circuit, detector means connected to produce a control output indicative of the charging of said capacitive circuit to a predetermined trigger level, means responsive to the control output of said detector means for causing said shutter to close, whereby said shutter remains open for a predetermined interval determined by said first manually variable bias voltage source and said photoelectric element in the case of automatic exposure time setting, and by said second manually variable bias voltage source in the case of manual exposure time setting.

3,968,503

SHUTTER FOR PHOTOGRAPHIC CAMERAS WITH A FLASH EQUIPMENT

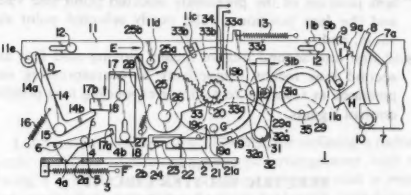
Hirokazu Kaneko, and Hiroo Nakano, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Japan

Filed May 23, 1975, Ser. No. 580,214

Claims priority, application Japan, May 23, 1974, 49-58205[U]; May 23, 1974, 49-58206[U]

Int. Cl.² G03B 7/16

U.S. Cl. 354—33 **3 Claims**



1. A shutter for photographic cameras with a flash equipment including flash means adapted to be actuated by an electrical signal, said shutter comprising, in combination, diaphragm blade means operable to set the diaphragm aperture to a proper value in accordance with the brightness of an object to be photographed; blade drive means movable between a fixed position, in which said blade means is maintained in a closed position, and a variable position, in which said blade means is maintained in an open position; a fly wheel adapted to be driven from a first position to a second position, said fly wheel having an actuating pin means and stop means operable to maintain said blade drive means in its fixed position when said fly wheel is in its first position; means operable, responsive to release of said shutter, to engage said actuating pin means to drive said fly wheel; cam means operatively associated with said blade drive means and operable to set the variable position of said blade drive means properly in accordance with the brightness of the object; control lever means, movable responsive to release of said shutter, from a fixed position to a variable position which latter is determined in accordance with the brightness of the object, said control level means having pin means operable to set said cam means and to set said second position of said fly wheel; and means mounted in the path of movement of said actuating pin means for producing said electrical signal when said fly wheel rotates through an angle greater than a predetermined angle of rotation.

3,968,504

INTERCHANGEABLE LENS BARREL STRUCTURE

Yoshio Komine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1974, Ser. No. 498,041

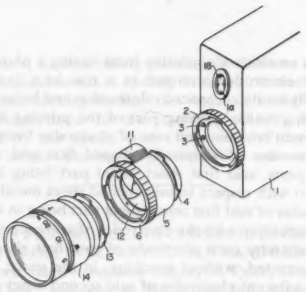
Claims priority, application Japan, Aug. 28, 1973, 48-96503

Int. Cl.² G03B 7/20

U.S. Cl. 354—46 **6 Claims**

1. An improvement in a camera system comprising in combination:

a camera unit housing having an opening at a front plane thereof for allowing incident light into said housing; a first attaching and detaching means positioned near said opening; a power source provided within said camera unit housing; an object brightness detection means for detecting the brightness of an object outside of said camera unit housing, said detection means being provided within said camera unit housing and electrically connected with said power source; a circuit for determining the amount of light entering said housing, said circuit being provided within said housing and electrically connected to said detection means in order to generate a signal corresponding to the output of said detection means; and a first electric connector means having a first end connected to the output of said circuit and a second end connected to said first attaching and detaching means; an interchangeable lens unit which can be selectively attached to or detached from said camera unit housing comprising a rear barrel section having a first and second open end; a lens system mounted within said rear barrel section; second attaching and detaching means mounted on said first end of said rear barrel section for attaching said rear barrel section to said first attaching and detaching means;



a third attaching and detaching means mounted on said second end of said rear barrel section; blades mounted in said rear barrel section forming an opening allowing the passage of light therethrough, said opening being variable to control the amount of light passing therethrough; driving means for said blades for controlling the opening formed thereby; a second electric connector means having a first end connected to said driving means and a second end connected to said second attaching and detaching means; a front barrel section for selective attachment to or detachment from said rear barrel section having a first and second open end; a photographing optical system positioned within said front barrel section; a forth attaching and detaching means mounted on said first end of said front barrel section for engagement with said third attaching and detaching means so that said front barrel section may be secured to or removed from said rear barrel section, whereby said driving means is controlled by the output from said cicuit and the amount of light entering the camera housing through said front barrel section is controlled.

3,968,505

DATA RECORDING SYSTEM FOR AUTOMATIC CAMERAS

John J. Kauneckas, 2301 E St. NW., Apt. A806, Washington, D.C. 20037

Filed Jan. 14, 1975, Ser. No. 540,835

Int. Cl.² G03B 17/24

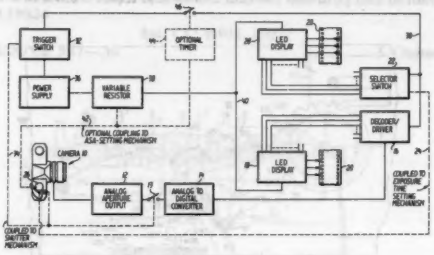
U.S. Cl. 354—106 **9 Claims**

1. A system for recording on photographic film electronically controlled exposure settings of an automatic camera comprising:

circuit means adapted to be coupled to the exposure control electronic circuitry of said camera for obtaining analog control signals representing said electronically controlled exposure settings;

analog-to-digital converter means coupled to said circuit means for converting said analog signals to digital form;

decoder means coupled to said analog-to-digital converter means for decoding the output thereof; and,



first recording means adapted to be positioned adjacent an edge portion of said photographic film within said camera, said first recording means including first electroluminescent display means coupled to said decoder means for recording on the edge portion of said film in a predetermined code said electronically controlled camera exposure settings.

3,968,506

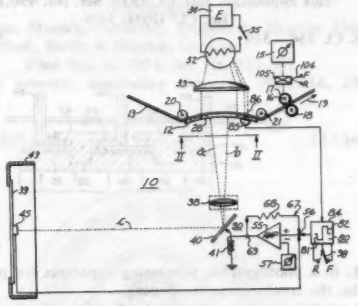
IMAGE DISPLAY FROM CONTINUOUSLY MOVING IMAGE CARRIER

Joseph H. Lancor, Jr., deceased, late of Arcadia, Calif. (by Ellen B. Lancor, administratrix), and Leonard A. Ferrari, San Clemente, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 89,323, Nov. 13, 1970. This application Dec. 19, 1972, Ser. No. 316,604

Int. Cl.² G03B 41/10

U.S. Cl. 352—109 **19 Claims**



1. In apparatus for displaying images of a succession of recordings from a carrier, the improvement comprising in combination:

means coupled to said carrier for substantially continuously moving the carrier;

electrically powered optical compensator means including a repeatedly advanceable and resettable driven compensator part for compensating for the continuous carrier movement, said driven compensator part being constructed and mounted for advance in accordance with substantially the following equation of motion:

$$F(t) = J\frac{d^2x}{dt^2} + b\frac{dx}{dt}$$

where

$F(t)$ = force for advancing the driven compensator part;

J = mass-moment of inertia of the driven compensator part;

b = damping coefficient of the driven compensator part;

dx/dt = velocity of the driven compensator part;

d^2x/d^2 = acceleration of the driven compensator part;

means operatively associated with said carrier and said optical compensator means for displaying said images by way of said driven compensator part;

means for sensing relative movements of each displayed image;

means connected between said sensing means and said compensator means for controlling the application of electric power to said electrically powered compensator means in response to sensed image movements, whereby to render the display of each image substantially stationary;

means for providing for each reset of said driven compensator part electric resetting power comprising an electric power pulse doublet; and

means connected between said resetting power-providing means and said compensator means for applying said electric resetting power comprising said electric power pulse doublet to said compensator means, whereby to reset said driven compensator part preparatory to the display of a succeeding image;

said resetting power-providing means including adjustable means for providing said power pulse doublet with a net energy sufficient to initiate an advance of said driven compensator part after completion of a resetting operation.

3,968,507

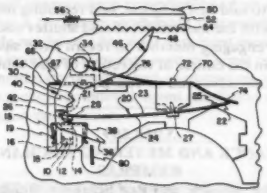
FILM ADVANCE-FLASH INTERLOCK MECHANISM

Jeffrey R. Stoneham, Hilton, and Thomas E. Dussinger, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,305

Int. Cl.² G03B 15/04

U.S. Cl. 354—135 **4 Claims**



1. A photographic camera comprising:

means, including a first member movable from a rest position, for advancing film within said camera;

means, including a piezoelectric crystal, for generating electrical energy;

a second member movable from a latched position to strike said generating means and generate electrical energy;

means for releasably retaining said second member in said latched position;

means, coupling said first and second movable members, for moving said second member to its latched position in response to movement of said first member from its rest position; and

means, including a blocking member, for preventing return of said first member to its rest position prior to movement of said second member to its latched position.

3,968,508

PHOTOGRAPHIC CAMERA WITH MULTIPLE EXPOSURE MEANS

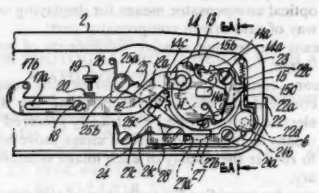
Takeshi Ikeuchi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 23, 1974, Ser. No. 491,093

Claims priority, application Japan, July 24, 1973, 48-86963[U]; June 17, 1974, 49-68170

Int. Cl.² G03B 19/02

U.S. Cl. 354—209 10 Claims



4. A photographic camera for multiple exposure comprising film winding means having at least one engaging portion; shutter cocking means movable from a rest position to an advanced position for shutter cocking and further returnable to said rest position, said shutter cocking means having an engaging member movable between a first position engageable with said engaging portion upon the movement of said shutter cocking means from said rest to advanced position and a second position unengageable with the same for operating said film winding means in association with the operation of said shutter cocking means between said engaging portion and said engaging member in said first position, mode changing means for changing said engaging member from said first to second position with said shutter cocking means in said rest position for allowing said shutter cocking means to initiate the movement from said rest to advanced position without the operation of said film winding means, said mode changing means being further related with said shutter cocking means for allowing said engaging member to return from said second to first position in the course of the movement of said shutter cocking means from said rest to advanced position, and means for retaining said engaging member in said second position before said mode changing means allows said engaging member to return to said first position, said retaining means further cooperating with the movement of said shutter cocking means to allow said engaging member to return from said second to first position in the course of the return of said shutter cocking means from said advanced to rest position.

3,968,509

FILM ADVANCE AND METERING MECHANISM FOR CAMERAS

Alfred Winkler, Munich, and Rolf Schröder, Baldham, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Aug. 30, 1974, Ser. No. 502,010

Claims priority, application Germany, Aug. 31, 1973, 2343890

Int. Cl.² G03B 1/16

U.S. Cl. 354—213 9 Claims

1. In a photographic apparatus for use with photographic roll film having a row of perforations, one for each film frame, a combination comprising means for transporting the film lengthwise along a predetermined path; control means movable from a first position to a second position to thereby terminate the transport of film along said path; displacing means movable from a first to a second position to thereby move said control means to said second position; first means for biasing said displacing means to said second position thereof; blocking means movable from a first to a second position in which said blocking means respectively prevents and permits the movement of said displacing means from the first to the second position of said displacing means; a mobile feeler having a scanning portion in line with the row of perforations of the film in said path; and second means for biasing said scanning portion against the film in said path so that said scanning portion enters an oncoming perforation only under the action of said second biasing means during transport of the film in said path and the film moves said feeler from a first to

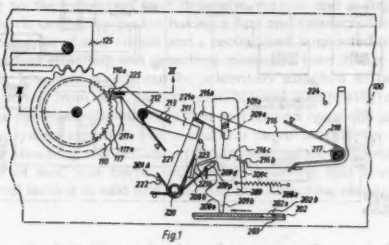


Fig 1

a second position in response to further transport of the film along said path, said feeler having a second portion which moves said blocking means from said first to said second position not later than when said feeler reaches said second position thereof, said displacing means having a portion which bears against said feeler and urges said scanning portion into the adjacent perforation of the film in said path only in said second position of said displacing means whereby said scanning portion is urged into the adjacent perforation by said first as well as by said second biasing means.

3,968,510

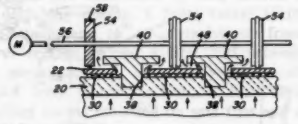
CONDUIT FOR PROCESSING WEBS WITH A LIQUID SOLUTION

Robert F. Allen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 375,576, July 2, 1973, abandoned. This application July 19, 1974, Ser. No. 490,155

Int. Cl.² G03D 5/00

U.S. Cl. 354—319 24 Claims



1. In a photographic processing apparatus for processing webs, the combination comprising:

a conduit having openings extending from the inner surface of said conduit to the outer surface of said conduit at least along a helical path;

means connected to said conduit for continuously directing a liquid processing solution through said openings to form a continuous liquid solution cushion on said outer surface along said helical path; and

means for guiding a web helically around said conduit with one surface of said web in engagement with said helical liquid solution cushion for processing said web, said liquid solution cushion further supporting said web during processing with said one surface of said web held out of engagement with the outer surface of said conduit.

3,968,511
SEMICONDUCTOR DEVICE WITH ADDITIONAL CARRIER INJECTING JUNCTION ADJACENT EMITTER REGION

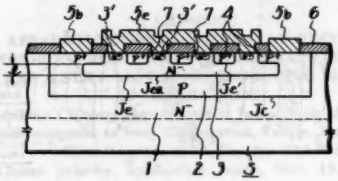
Hajime Yagi, Tokyo; Tadaharu Tsuyuki, Isehara; Kotaro Koma, and Yoshihiro Miyazawa, both of Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 11, 1974, Ser. No. 522,773

Claims priority, application Japan, Nov. 19, 1973, 48-129924

Int. Cl.² H01L *29/72*

U.S. Cl. 357—36 **5 Claims**



1. A semiconductor device comprising:
a. a first region of a first conductivity type;
b. a second region of a second conductivity type interfaced with said first region;
c. a third region of said first conductivity type and predetermined impurity concentration interfaced with said second region and remote from said first region;
d. a fourth region of said second conductivity type remote from said second region and interfaced with said third region to form an additional junction therewith and having a plurality of windows therein;
e. a distance between said fourth region and said second region being selected shorter than the diffusion length of minority carriers in said third region injected from said second region; and
f. a plurality of ohmic contact portions formed in said windows of said fourth region.

3,968,512
THYRISTOR

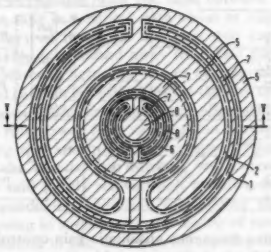
Peter Voss, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 6, 1974, Ser. No. 521,387

Claims priority, application Germany, Nov. 14, 1973, 2356906

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **14 Claims**



1. In a thyristor with a semiconductor element, which includes a main thyristor and at least one auxiliary arrangement which amplifies the control current, the main thyristor having a main emitter and the auxiliary arrangement having an auxiliary emitter, and a base which is common to the main thyristor and the auxiliary arrangement, with pn-junctions lying between the base and the emitters, emitter electrodes being disposed on the emitters, and a control electrode connected to the base wherein the edge lengths of the emitters of the main thyristor and the auxiliary arrangement have ratio such that the current i_r is greater than i_u, where i_r is determined by the product of the emitter edge length and the line current density j_r which has a value in the range between 0.3 and 1.0 amperes per milimeter of emitter edge length, and the current i_u is that load current at which the voltage across the thyristor has fallen to 10% or less of the breakover voltage.

3,968,513
SYSTEM FOR RECORDING A COLOR TELEVISION SIGNAL WITH REDUCED BANDWIDTH

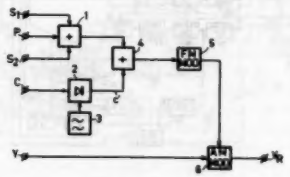
Maarten Rutger de Haan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 6, 1974, Ser. No. 476,785

Claims priority, application Netherlands, Feb. 28, 1974, 7402692

Int. Cl.² H04N *5/76, 9/02*

U.S. Cl. 358—4 **13 Claims**



1. A disc-shaped record carrier provided with a spiral track on which a colour television signal is recorded, wherein said colour television signal is recorded in the track as a trackwidth modulation, the chrominance signal being recorded as a frequency modulation of a carrier and the luminance signal as an amplitude modulation of said frequency modulated carrier.

2. A system for recording a color television signal having luminance and chrominance components, said system comprising a frequency modulator having an input means for receiving said chrominance component and an output means for supplying a frequency modulated first carrier signal; and an amplitude modulator having a first input means for receiving said luminance component, a second input coupled to said frequency modulator output, and an output means for supplying said frequency modulated signal amplitude modulated by said luminance component.

3,968,514
MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Hisaaki Narahara, Musashino, and Yoshio Ishigaki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,454

Claims priority, application Japan, Dec. 28, 1973, 49-3349; Dec. 28, 1973, 49-3352

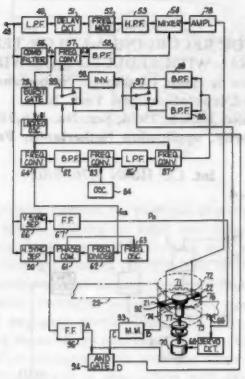
Int. Cl.² H04N *5/79*

U.S. Cl. 358—4 **10 Claims**

1. In a recording system for recording PAL color television signals in a plurality of parallel tracks on a recording medium, the PAL signals being divided into line and field intervals and including a chrominance portion modulated on a PAL signal sub-carrier the phase of which is reversed for each line interval, and each of said tracks being divided into line interval areas, apparatus comprising:

A. a frequency converter, the chrominance signal portion of the PAL signal being applied to the frequency converter;

B. means to generate a first frequency converting sub-carrier at a first frequency equal to the sum of the sub-carrier frequency of the PAL color television signal plus a conversion sub-carrier frequency and a second frequency converting sub-carrier at a second frequency equal to the difference between the PAL color television sub-carrier frequency and a conversion sub-carrier frequency, the first and second frequencies differing from each other by an odd integral multiple of one-half the line repetition frequency of the PAL color television signal; and



C. connecting means for applying the first and second frequency converting sub-carriers alternately, each for a line interval at a time, to the frequency converter to convert the PAL color television chrominance signal to an NTSC-type chrominance signal in a frequency band including the respective frequency converted chrominance sub-carrier frequency, said connecting means connecting the first and second frequency converting sub-carriers in one order during the recording of alternate ones of the tracks and in a different order during the remaining alternate tracks.

3,968,515

SINGLE FRAME COLOR ENCODING/DECODING SYSTEM

Joseph Peter Bingham, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 11, 1975, Ser. No. 557,412
Int. Cl.² H04N *5/84*; **G02B** *5/18*
U.S. Cl. 358—5 **14 Claims**

1. A single frame color encoding/decoding system comprising:

A. an image plate;

B. means for scanning an image developed on said image plate; and said scanning means having a passband such that only frequencies below an upper cutoff frequency are directly resolved by said scanning means;

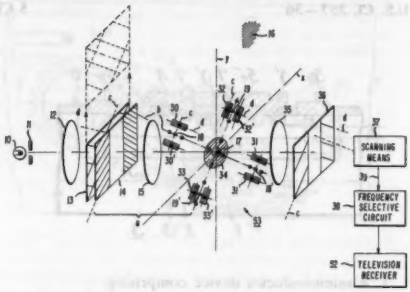
C. a source of sufficiently limited bandwidth and spatially bounded radiant energy for projecting a transparency;

said transparency carrying individual information components on separate, relatively high frequency, spatial carriers oriented in different directions; and the frequencies of said relatively high frequency spatial carriers being above said upper cutoff frequency of said scanning means;

D. a grating rigidly fixed to said scanning means positioned adjacent to said transparency in the path of said radiant energy; said grating consisting of superposition of a plurality of unmodulated, relatively low frequency, spatial carriers also disposed in different orientations; and the frequencies of said relatively low frequency spatial carriers being below said upper cutoff frequency of said scanning means;

E. means positioned in the path of said radiant energy for obtaining a diffraction pattern of the product of said encoded transparency and said grating on a transform plane;

F. means for masking in said transform plane so as to limit each individual information component, encoded in said transparency, to remain on only one of said relatively low



frequency spatial carriers of said grating in the output of said masking means;

G. means for imaging the output of said masking means on said image plate, wherein said scanning means translates said low frequency spatial carriers on said image plate into corresponding temporal electrical carriers in the output of said scanning means; and

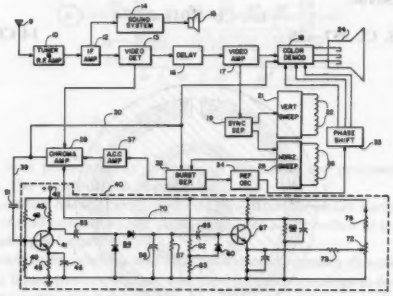
H. frequency responsive means coupled to the output electrode of said scanning means for obtaining therefrom signals representative of said individual information components.

3,968,516

AUTOMATIC GAIN CONTROL CIRCUIT

Paul A. Dal Santo, Woodridge, and Charles J. Marik, Chicago, both of Ill., assignors to Quasar Electronics Corporation, Franklin Park, Ill.

Filed June 3, 1974, Ser. No. 475,565
Int. Cl.² H04N *9/535*
U.S. Cl. 358—27 **12 Claims**



1. A selective frequency automatic gain control circuit for a signal amplifier including in combination:

input circuit means for receiving an amplitude modulated carrier signal having a first predetermined frequency,

a detector-filter network coupled with the output of said input circuit means and having circuit parameters selected to partially detect said carrier signal to produce an

output signal comprising the modulation waveform and a portion of the carrier signal;

second detector circuit means including high-pass filter means coupled with the output of said detector-filter network for detecting signals having frequencies above a second predetermined frequency, which is within the frequency range of the information portion of the modulated waveform and which is below said first predetermined frequency, and including means for blocking the detection of signals having a frequency below said second predetermined frequency; and means coupling said second detector circuit with said signal amplifier for supplying gain control signals thereto.

3,968,517

APPARATUS FOR MAGNETICALLY RECORDING AND/OR REPRODUCING VIDEO SIGNALS AND WHICH HAS A STILL MOTION REPRODUCING MODE OF OPERATION

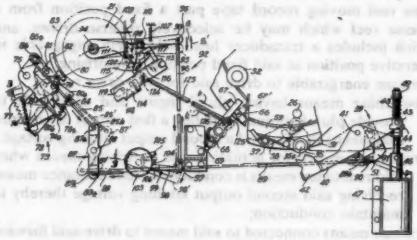
Toshihiko Chimura, and Hirokimi Iwata, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 11, 1974, Ser. No. 522,758

Claims priority, application Japan, Nov. 15, 1973, 48-131978[U]

Int. Cl.² H04N *5/78*; G11B *15/42*

U.S. Cl. 360—10 **13 Claims**



1. An apparatus for magnetically recording and/or reproducing video signals on a magnetic tape which is wound on, and extends between supply and take-up reels; comprising a cylindrical tape guide drum having rotary magnetic head means moved in a circular path substantially coinciding with the periphery of the drum, rotatable supply and take-up reel support members engageable by said supply and take-up reels, reel drive means for urging said take-up reel support member to rotate in the direction for winding the tape on said take-up reel, and thereby unwinding the tape from said supply reel, during normal recording and reproducing operations of the apparatus, a capstan spaced from said guide drum, tape guiding means engageable with the tape between said reels for guiding the tape in a helical path about at least a portion of said periphery of the drum and past said capstan, a pinch roller movable toward and away from said capstan with the tape therebetween, actuating means moving said pinch roller against said capstan for driving of the tape by the latter during said normal recording and reproducing operations and moving said pinch roller away from said capstan during a still motion reproducing operation of the apparatus for interrupting the driving of the tape by said capstan, brake means frictionally applied to said supply reel support member during said still motion reproducing operation for holding the supply reel against turning in response to the urging of said take-up reel support member in said direction for winding the tape on said take-up reel, and manually actuable means disposed adjacent said supply reel support member and having an engaging portion thereof normally spaced from said supply reel support member, said manually actuable means being actuable during said still motion reproducing operation so that said engaging portion thereof is urged into secure engagement with said supply reel support member and is responsive to manual control for overriding said brake means to turn the supply reel support member against the frictional resistance of said brake means and thereby displace said tape along said helical path so as to adjust the longitudinal position of the tape in respect to said circular path of the rotary head means.

3,968,518

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS FOR VIDEOTAPE EDITING

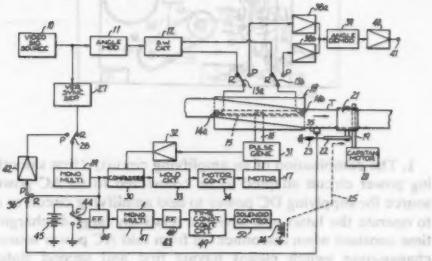
Nobutoshi Kihara, Tokyo, and Tsuguo Miki, Tachikawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 384,577, Aug. 1, 1973, abandoned. This application Mar. 4, 1975, Ser. No. 555,107

Claims priority, application Japan, Aug. 4, 1972, 47-78102

Int. Cl.² G11B *27/02*

U.S. Cl. 360—14 **17 Claims**



1. In a magnetic recording and reproducing apparatus having rotary head means moved in a circular path for selectively recording and reproducing video signals in respective tracks extending obliquely across a magnetic tape as the latter is transported in one longitudinal direction of the tape; the combination of drive means for effecting the longitudinal transport of the tape including a rotated capstan and a pinch roller movable toward and away from said capstan with the tape therebetween for starting and stopping, respectively, the operation of said drive means and hence the transporting of the tape in said one longitudinal direction, means for producing reference signals in correspondence to the video signals recorded in each of said tracks, means for producing rotational reference signals indicative of the rotational position of said rotary head means, comparator means for compraring the phase of said rotational reference signals with the phase of the first mentioned reference signals at least during the recording operation of the apparatus, means for controlling the rotational movements of said rotary head means in dependence on the phase comparison of said first and rotational reference signals at least during said recording operation of the apparatus so as to record predetermined periods of the video signals in said respective tracks, control means selectively actuable between first and second positions for initiating the starting and stopping, respectively, of the operation of said drive means, detecting means conditioned by actuation of said control means for detecting the occurrence of a predetermined one of said first reference signals following an actuation of said control means, and means controllable by said detecting means upon the detection by the latter of said predetermined first reference signal for selectively stopping and starting the operation of said drive means in dependence upon the positioning of said control means in said second and first positions, respectively, so that, on stopping the operation of the drive means, the tape is brought to rest in a predetermined position in respect to said circular path and, on starting said operation of the drive means, at least during said recording operation, the commencement of the movement of the tape from said position of rest occurs with said rotary head means in a predetermined rotational position.

3,968,519

AMPLIFIER WITH HOWLING-PREVENTING CIRCUIT

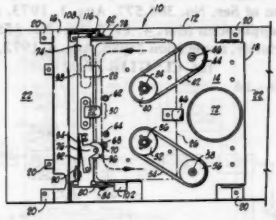
Jubo Yoneya, and Isamu Inagaki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 30, 1975, Ser. No. 582,286

Claims priority, application Japan, June 12, 1974, 49-68082[U]

Int. Cl.² G11B 15/02, 5/02

U.S. Cl. 360—62 13 Claims



1. The combination of an amplifying circuit, a first smoothing power circuit adapted to be connected to an AC power source for supplying DC power to said amplifying circuit so as to operate the latter and having a relatively large discharging time constant when disconnected from said AC power source, change-over switch means having first and second states, actuating means for said change-over switch means energizable to drive said change-over switch means to said first state and permitting the return of said change-over switch means to said second state upon deenergizing of said actuating means, a second smoothing power circuit also adapted to be connected to the AC power source for supplying DC power to energize said actuating means and having a relatively small discharging time constant when disconnected from said AC power source, and holding circuit means for holding said change-over switch means in said first state thereof for a predetermined time after said first and second smoothing power circuits are disconnected from said AC power source.

3,968,520

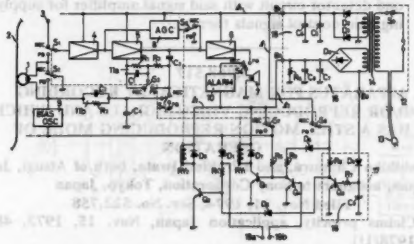
AUTOMATIC CONTROL CIRCUITRY FOR TAPE TRANSDUCING APPARATUS

Lawrence R. DeBell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to The Economy Company; David D. Price, Jr. and Ford C. Price, all of Oklahoma City, Okla., part interest to each

Filed Mar. 28, 1975, Ser. No. 563,136

Int. Cl.² G11B 5/55, 15/18, 21/08

U.S. Cl. 360—71 13 Claims



1. A control circuit for tape transducer apparatus of the type powered by an electrical source and having a forward drive reel moving record tape past a fixed position from a reverse reel which may be selectively reverse driven, and which includes a transducer head selectively engageable in operative position at said fixed position, comprising:

means energizable to drive said forward drive reel;

switching means having plural inputs and actuatable to provide plural outputs including a first output to energize said means to drive and a second output latching voltage;

reactance means for actuating said switching means when said reactance means is conductive, said reactance means receiving said second output latching voltage thereby to maintain conduction;

circuit means connected to said means to drive said forward drive reel which generates a voltage indicative of tape motion for input to said switching means as said latching voltage; and

second switching means actuatable to initiate conduction of said reactance means.

DESIGN PATENTS

GRANTED JULY 6, 1976

ERRATA

For CLASS	See PATENT NO.
009–060	240,391
025–056	240,419
016–061	240,457
016–063	240,458
016–030	240,459
016–017	249,460

DESIGN PATENTS

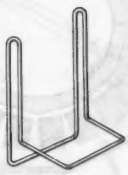
CHANGED JULY 6, 1976

CLASS 9

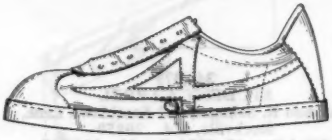
DESIGNS

JULY 6, 1976

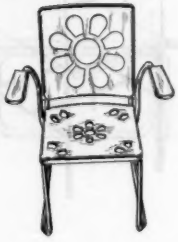
240,370
BELT-ATTACHED TOOL HOLDER
George E. Kuehl, 616 E. 16th Ave., Eugene, Oreg. 97401
Filed Sept. 23, 1974, Ser. No. 508,086
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



240,371
ATHLETIC SHOE
Bruce L. Shelly, Canton Ohio, and Michael L. Oliver, Temperance, Mich., assignors to Point Four Limited, Inc.
Filed Dec. 16, 1974, Ser. No. 530,971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



240,372
CHAIR
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation S.A., Poteaux, Hauts-de-Seine, France
Filed Nov. 9, 1973, Ser. No. 414,335
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



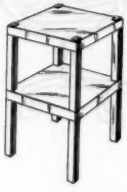
240,373
CHAIR SHELL
Philip Hugh Morton, Kidderminster, England, assignor to Pel Limited, Oldbury, Warley, England
Filed Feb. 6, 1974, Ser. No. 440,073
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197

240,374
CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Apr. 22, 1974, Ser. No. 463,193
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

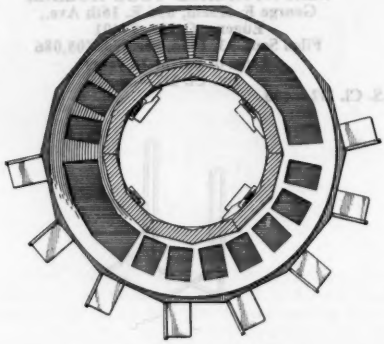
240,375
CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.
Filed Apr. 22, 1974, Ser. No. 463,194
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

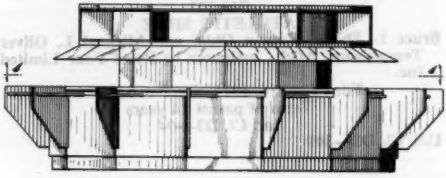
240,376
ARMCHAIR OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Apr. 23, 1974, Ser. No. 463,290
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

240,377
TELEPHONE STAND
George V. Goulder, 2707 Eaton Road, Shaker Heights, Ohio 44118
Filed July 5, 1974, Ser. No. 485,961
Term of patent 14 years
Int. Cl. D6—*179*
U.S. Cl. D6—179

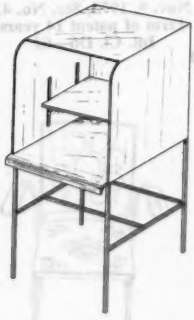


240,378
COMBINED ROTATING CAFETERIA TYPE FOOD SERVICE COUNTER AND DISPLAY CASE
Elmer R. Weddendorf, Cincinnati, Ohio, assignor to B/W Metals Company, Inc., Fairfield, Ohio
Filed Sept. 3, 1974, Ser. No. 503,028
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146

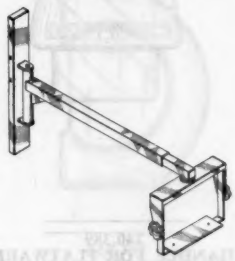




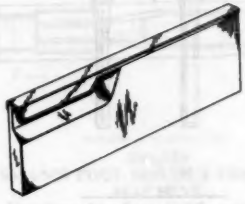
240,379
STUDENT CARREL
Norman R. Selinger, 401 Southlawn Lane, Rockville, Md. 20850
Filed Dec. 27, 1974, Ser. No. 536,745
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—181



240,380
WALL MOUNTED SUPPORT FOR TELEVISIONS OR THE LIKE
Henry E. Jepsen, Whittier, Calif., assignor to Corvex Corporation, Santa Fe Springs, Calif.
Filed Jan. 13, 1975, Ser. No. 540,326
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114

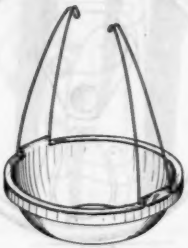


240,381
COMBINED DRAWER FRONT AND PULL THEREFOR
Michiharu Tazaki, Yokohama, Japan, assignor to Kyoei Kogyo Kabushiki Kaisha
Filed Mar. 3, 1975, Ser. No. 555,058
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

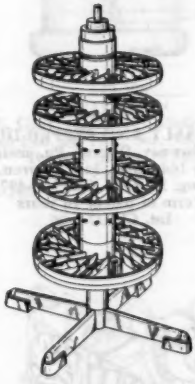


240,382
TABLE
Philip J. Hendrickson, and Richard J. Resch, Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.
Filed Apr. 21, 1975, Ser. No. 569,910
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

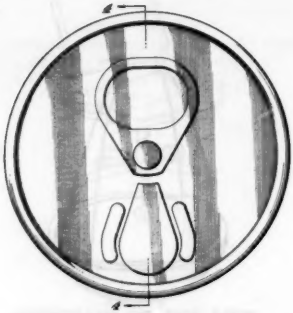
240,383
PENDANT DRIP RECEPTACLE FOR HANGING POTTED PLANTS
Del G. Connell, 22915 Dolorosa St., Woodland Hills, Calif. 91364
Filed June 30, 1975, Ser. No. 591,621
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—113



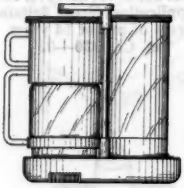
240,384
ROTARY DISPLAY STAND
Richard Roy Rumble, and Clive St. John Rumble, London, England, and Patrick J. Henderson, Larne, Northern Ireland, assignors to Fittall Products Limited London, England
Filed Feb. 26, 1975, Ser. No. 553,440
Claims priority, application Great Britain Aug. 30, 1974
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—29



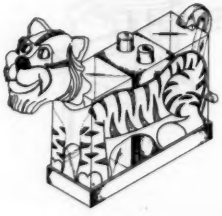
240,385
CONTAINER COVER
James K. Pfleider, Anoka, Minn., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 11, 1973, Ser. No. 368,711
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—131



240,386
COFFEEMAKER
Franz Alban Stuetzer, Muehlheim, am Main, Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Germany
Filed July 26, 1974, Ser. No. 492,124
Claims priority, application Germany Jan. 29, 1974
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



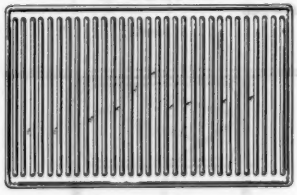
240,387
COMBINED SALT AND PEPPER DISPENSER
John W. Downey, Warren, Pa., assignor to Whirley Industries, Inc., Warren, Pa.
Filed Aug. 16, 1974, Ser. No. 497,845
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—56



240,388
DRINKING GLASS
John M. Werling, 209 E. 36th St., Apartment #3, Kansas City, Mo. 64111
Filed Sept. 18, 1974, Ser. No. 506,959
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15

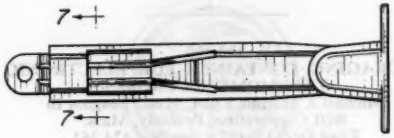
240,389
HANDLE FOR FLATWARE
Theodore Merry, Byfield, Mass., assignor to Towle Manufacturing Company, Newburyport, Mass.
Filed Feb. 18, 1975, Ser. No. 550,198
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—152

240,390
KITCHEN CUTTING BOARD
Franklin G. Smith, Portland, Oreg., assignor to Manufacturers Consultants, Inc., Portland, Oreg.
Substitute for application Ser. No. 381,889, July 23, 1973. This application Mar. 5, 1975, Ser. No. 555,521
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46

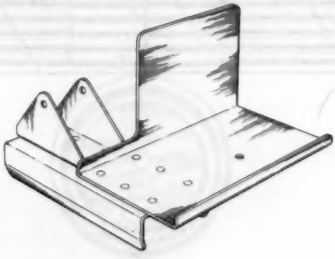


240,391
BOTTLE OR SIMILAR ARTICLE
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 25, 1975, Ser. No. 561,811
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

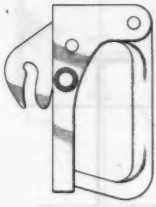
240,392
DOOR SUPPORT
Howard B. Gorton, San Gabriel, George D. Read, Glendora, and Keith E. Ridgeway, West Covina, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed May 17, 1974, Ser. No. 470,925
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203



240,393
DRAFTSMAN'S TOOL HOLDER FOR A DRAFTING MACHINE
Mark T. Donahue, San Jose, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Oct. 29, 1974, Ser. No. 518,761
Term of patent 14 years
Int. Cl. D6—*03;* D8—*08*
U.S. Cl. D8—71



240,394
LOCKING DRAWER HANDLE
Larry A. Geer, Upland, and Ralph L. Sheffer, Arcadia, Calif., assignors to Adams Rite Products, Inc., Glendale, Calif.
Filed Dec. 2, 1974, Ser. No. 528,644
Term of patent 14 years
Int. Cl. D8—*06;* D8—*07*
U.S. Cl. D8—150

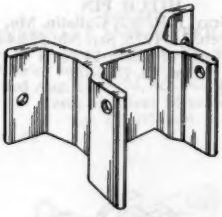


240,395
SUSPENSION HANDLE FOR DATA BINDERS
Walter Feldmahr, Highland Park, Ill., assignor to Acco International Inc., Chicago, Ill.
Filed Dec. 17, 1974, Ser. No. 533,681
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154

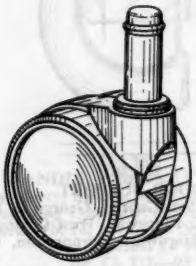
240,396
HITCH PIN
Marvin E. Gray, R.R. #2, Gallatin, Mo. 64640
Filed Feb. 24, 1975, Ser. No. 552,446
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—265

240,397
STUD STABILIZER
David M. Robinson, 6710 NW. 8th St., Margate, Fla. 33063
Filed Feb. 27, 1975, Ser. No. 553,581
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

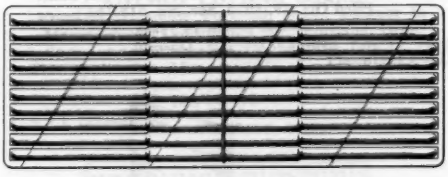
240,398
BRACKET FOR A RETRACTABLE AWNING
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Mar. 24, 1975, Ser. No. 561,329
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—208



240,399
DUAL WHEEL CASTER ASSEMBLY
Donald C. Crescenzi, Branford, and Frank J. Fontana, Stratford, Conn., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed June 6, 1975, Ser. No. 584,378
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—226

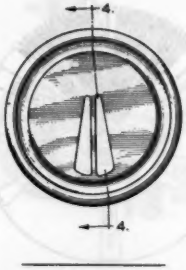


240,400
PACKAGING CONTAINER FOR ELECTRONIC THERMOMETER PROBES
Michael J. Marino, Lynn, Mass., assignor to ROI Corporation, Peabody, Mass.
Filed Dec. 13, 1973, Ser. No. 424,361
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



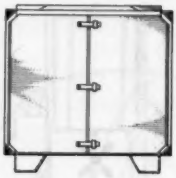
240,401
AEROSOL DISPENSER
John C. Armstrong, 1031 Canton Ave., Milton, Mass. 02186
Filed June 10, 1974, Ser. No. 477,662
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23

240,402
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 6, 1974, Ser. No. 530,462
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253

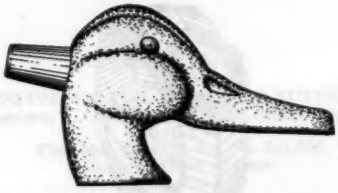


240,403
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 6, 1974, Ser. No. 530,465
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253

240,404
MODULAR SHIPPING CONTAINER
Frederic J. Singer, 715 S. Nakama Drive, Santa Ana, Calif. 92704
Filed Jan. 20, 1975, Ser. No. 542,203
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—246

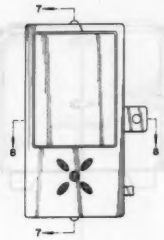


240,405
WATER FOWL HEAD GAME CALL
Walter Erhart, Box 36, Kirkwood, Del. 19708
Filed Apr. 25, 1975, Ser. No. 571,748
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—120



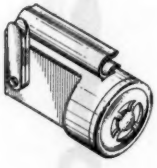
240,406
HAND FOR A WATCH
Paulette G. Kelman, 19264 Pacific Coast Highway, Malibu, Calif. 90265
Filed Nov. 27, 1970, Ser. No. 26,203
Term of patent 14 years
The term of this patent subsequent to Dec. 6, 1988, has been disclaimed
Int. Cl. D10—*07*
U.S. Cl. D10—127

240,407
CLOCK DIAL
Roman J. Szalek, La Salle, Ill., assignor to General Time Corporation, Thomaston, Conn.
Filed Dec. 17, 1974, Ser. No. 533,665
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—126



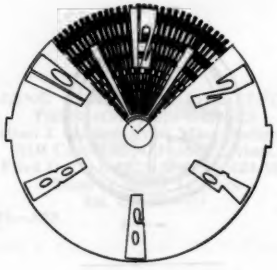
240,408
CLOCK DIAL
Roman J. Szalek, La Salle, Ill., assignor to General Time Corporation, Thomaston, Conn.
Filed Dec. 18, 1974, Ser. No. 534,061
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—126

240,409
DIGITAL MULTIMETER
Derek David Roberts, Berkhamsted, England, assignor to The Solartron Electronic Group Ltd., Farnborough, England
Filed Jan. 20, 1975, Ser. No. 542,399
Claims priority, application United Kingdom July 27, 1974
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

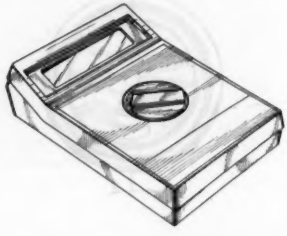


240,410
INTRUSION ALARM
Akinobu Fujiwara, 593–38 Naganuma-cho, Hachioji, Tokyo, Japan
Filed Jan. 20, 1975, Ser. No. 543,010
Claims priority, application Japan Sept. 4, 1974
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

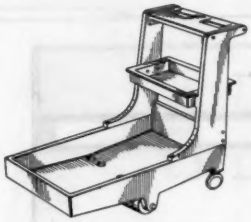
240,411
WRIST WATCH
Terry M. Haber, 3050 S. Bristol, 8C, Santa Ana, Calif. 92707
Filed Mar. 3, 1975, Ser. No. 554,690
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32



240,412
FISHING SIGNAL
Theodore Montgomery, Box 43, and Wayne T. Wise, Box 175, both of Frankfort, S. Dak. 57440
Filed Mar. 6, 1975, Ser. No. 555,745
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—120



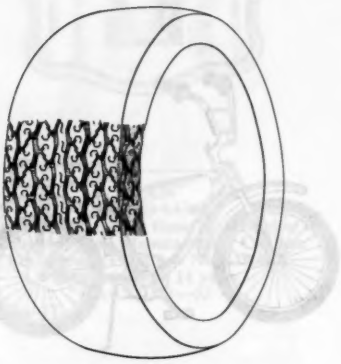
240,413
NURSERY CART
Calvin D. Swalm, deceased, late of San Diego, Calif., by Geraldine F. Swalm, executrix, 8930 Heraldry St., San Diego, Calif. 92123
Filed Apr. 4, 1974, Ser. No. 457,781
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



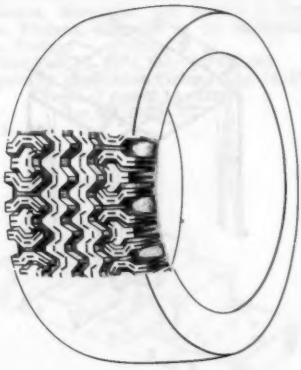
240,414
ADJUSTABLE WHEELCHAIR
Morton I. Thomas, Monroe, N.Y., assignor to Temco Products, Inc.
Filed Sept. 23, 1974, Ser. No. 508,066
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131

240,415
CAR TOP LUGGAGE CARRIER
Edward J. Schoening, 9726 S. Charles St., Chicago, Ill. 60621
Filed Jan. 20, 1975, Ser. No. 542,171
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157

240,416
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Agawam, Mass., assignor to Uniroyal, Inc.
Filed Mar. 10, 1975, Ser. No. 556,832
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

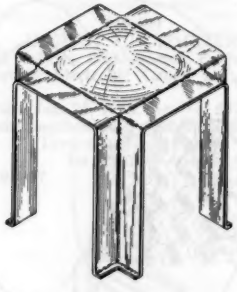


240,417
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Agawam, Mass., assignor to Uniroyal, Inc.
Filed Mar. 24, 1975, Ser. No. 561,566
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

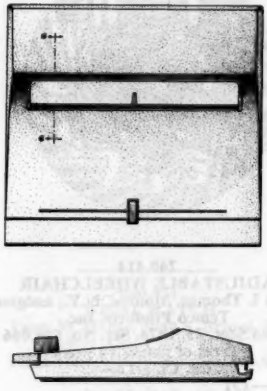


240,418
BICYCLE
Tetsuo Hirano, Hammatsu, Japan, and Danny H. Shumate, La Mirada, Calif., assignors to U.S. Suzuki Motor Corporation, Santa Fe Springs, Calif.
Continuation-in-part of abandoned design application Ser. No. 381,043, July 20, 1973. This application Apr. 23, 1975, Ser. No. 570,732
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111

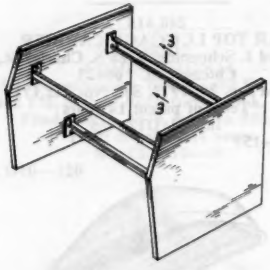
240,419
SHELTER FOR RAPID TRANSIT AND BUS STATIONS
William B. Cooke, 40 Fitzgerald Road, Marlboro, Mass. 01752
Filed Oct. 2, 1974, Ser. No. 511,483
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—56



240,420
TELEPHONE INDEX
Manfred Hegemann, Nyack, N.Y., assignor to The Bates Manufacturing Company, Orange, N.J.
Filed Sept. 9, 1974, Ser. No. 504,115
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

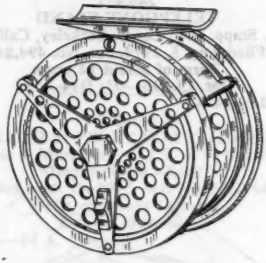


240,421
RACK FOR SUSPENSION OF DATA BINDERS
Allen J. Rose, Long Grove, Ill., assignor to Acco International Inc., Chicago, Ill.
Filed Dec. 17, 1974, Ser. No. 533,679
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D19—90

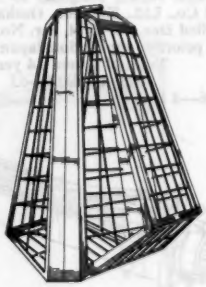


240,422
TRACK FOR SUSPENSION OF DATA BINDERS
Walter Feldmahr, Highland Park, Ill., assignor to Acco International Inc., Chicago, Ill.
Filed Dec. 17, 1974, Ser. No. 533,680
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—99

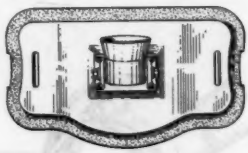
240,423
REEL FOR FLY FISHING
Gary R. Oberg, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Aug. 1, 1974, Ser. No. 493,986
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



240,424
TRAP FOR CRABBING AND FISHING
Thomas McSherry, Bayport, N.Y., assignor to Woodstream Corporation, Lititz, Pa.
Filed Dec. 11, 1974, Ser. No. 531,777
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

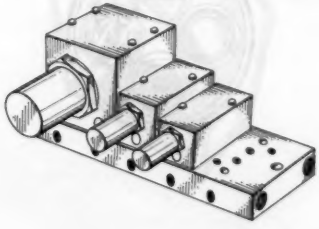


240,425
FISHING POLE HOLDER
Donald Joseph Gurgiolo, Islamorado, Fla., assignor to Gonfishin Products, Inc.
Filed June 10, 1975, Ser. No. 585,687
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



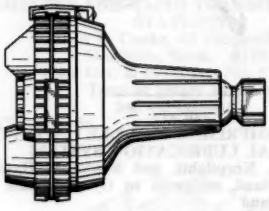
240,426
FISHING LURE
C. Paul Haven, Beaver Dam, Ky., assignor to Nationwide Lure Manufacturing Co., Inc.
Filed Oct. 2, 1975, Ser. No. 619,012
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

240,427
MANIFOLD COMPRISING MODULE UNITS FOR A CENTRAL LUBRICATION SYSTEM
Alpo E. Ikonen, Korpilahti, and Kauko S. Hytonen, Muurame, Finland, assignors to Oy Safematic Ltd., Muurame, Finland
Filed Feb. 13, 1974, Ser. No. 442,009
Claims priority, application Finland Aug. 16, 1973
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

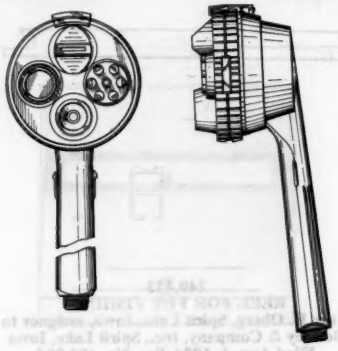


240,428
PIPE ADAPTER
John J. Hoffman, South Bend, Ind., assignor to Jackel Company, Inc., South Bend, Ind.
Filed Nov. 13, 1974, Ser. No. 523,243
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

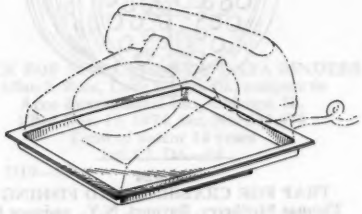
240,429
SHOWER HEAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Aug. 18, 1975, Ser. No. 605,262
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



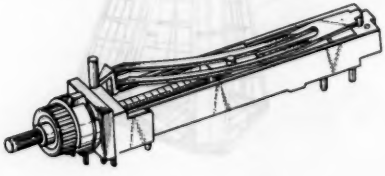
240,430
HAND-HELD SHOWER HEAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Aug. 18, 1975, Ser. No. 605,263
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—35



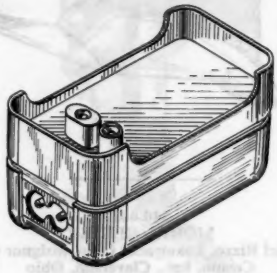
240,431
TELEPHONE STAND
Henry P. Stapp, 1401 Leroy, Berkeley, Calif. 94708
Filed Aug. 5, 1974, Ser. No. 494,844
Term of patent 14 years
Int. Cl. D6—*03*; D14—*03*
U.S. Cl. D26—14 A



240,432
VARIABLE RESISTOR
Shunzo Oka, Hirakata, Osaka, and Akitoshi Moyashita, Suita, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Dec. 20, 1974, Ser. No. 534,921
Claims priority, application Japan June 20, 1974
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 D

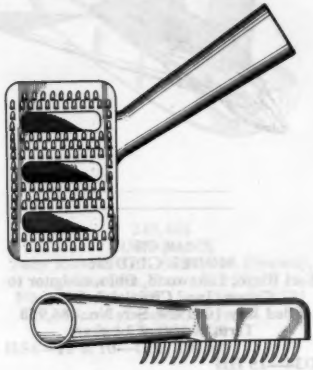


240,433
ELECTRIC SHAVER BATTERY CHARGING STAND
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.
Filed Feb. 24, 1975, Ser. No. 552,631
Term of patent 14 years
Int. Cl. D13—*02;* D28—*03*
U.S. Cl. D26—15 B

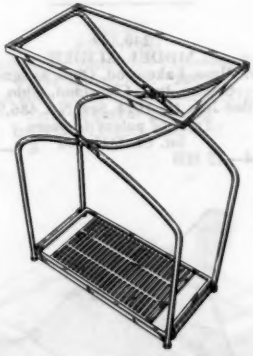


240,434
SHOULDER SUPPORT FOR TELEPHONES
Lyle J. Martinsen, 315 E. 6310 South Murray, Utah 84107
Filed Mar. 10, 1975, Ser. No. 556,764
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

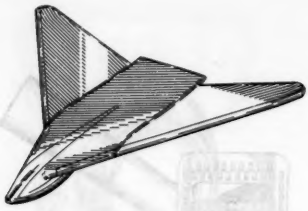
240,435
DOG BRUSH
Jerry Remijas, Chicago, Ill., assignor to Corporate Products Research, Inc., Chicago, Ill.
Filed Sept. 6, 1974, Ser. No. 506,281
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40



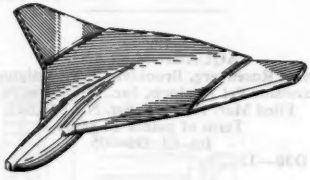
240,436
AQUARIUM STAND
Samuel Rosenberg, Brooklyn, N.Y., assignor to Excelsior Pet Products, Inc., Brooklyn, N.Y.
Filed Mar. 10, 1975, Ser. No. 556,627
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D30—12



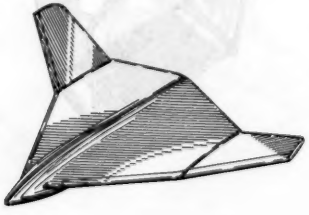
240,437
MODEL GLIDER
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio
Filed July 10, 1974, Ser. No. 486,957
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



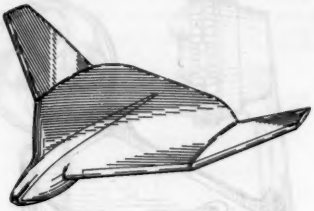
240,438
MODEL GLIDER
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio
Filed July 10, 1974, Ser. No. 486,958
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



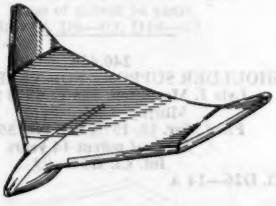
240,439
MODEL GLIDER
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio
Filed July 10, 1974, Ser. No. 486,959
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



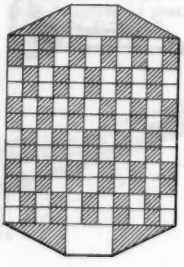
240,440
MODEL GLIDER
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio
Filed July 10, 1974, Ser. No. 487,046
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



240,441
MODEL GLIDER
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio
Filed July 10, 1974, Ser. No. 487,383
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH

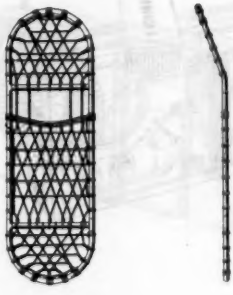


240,442
GAME BOARD
Erik Yngvar Iversby, Solliruta N–1720, Greaker, Norway
Filed Aug. 26, 1974, Ser. No. 500,736
Claims priority, application Norway Feb. 25, 1974
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

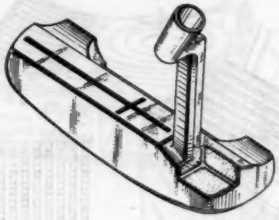


240,443
REVERSIBLE RED RIDING HOOD DOLL
Barbara J. Andresen, 738 E. Palmaire, Phoenix, Ariz. 85020
Filed Sept. 25, 1974, Ser. No. 509,094
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

240,444
SNOWSHOE
John E. Butler, P.O. Box 1007, Nevada City, Calif. 95959
Filed Dec. 9, 1974, Ser. No. 530,530
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D34—14 D

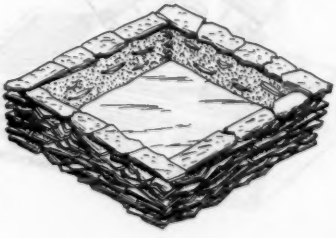


240,445
GOLF PUTTER HEAD
Jerome E. Becker, 3285 Woodbine St., Los Angeles, Calif. 90064
Filed Jan. 23, 1975, Ser. No. 543,227
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

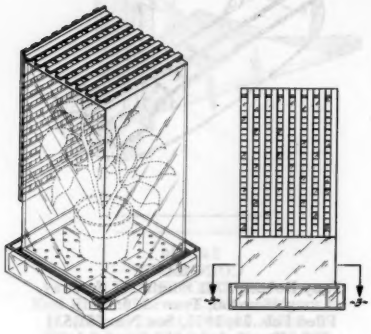


240,446
COIN BANK
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Feb. 21, 1975, Ser. No. 551,531
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D34—11 R

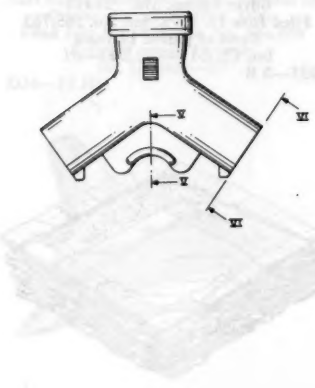
240,447
PLANTER
Marshall D. Le Vine, 8359 Colesville Road, Silver Spring, Md. 20910
Filed June 11, 1975, Ser. No. 585,783
Term of patent 14 years
Int. Cl. D11—*02*; D23—*01*
U.S. Cl. D35—3 B



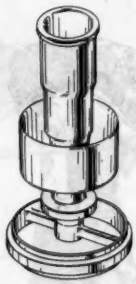
240,448
COMBINED MINIATURE GREENHOUSE AND HUMIDIFYING RESERVOIR THEREFOR
Kanji Hitomi, 1216 56th Ave., Sacramento, Calif. 95831
Filed Aug. 27, 1975, Ser. No. 608,029
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



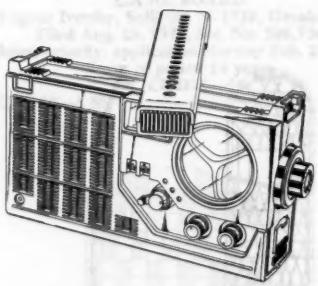
240,449
FLASHLIGHT
Howard T. Livingston, 700 Leisure Drive 32, Fort Worth, Tex. 76112
Filed May 14, 1975, Ser. No. 577,302
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



240,450
CANDLESTICK
Prentice Clyde Webb, Jr., 16920 El Tiro Road, Marana, Ariz. 85238
Filed Aug. 8, 1975, Ser. No. 602,968
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2

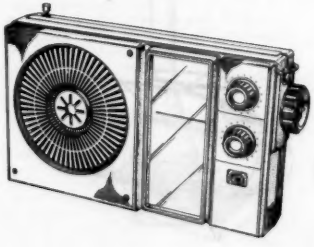


240,451
RADIO RECEIVER
Takao Okada, Kyoto, Ken Kawamura, Ibaragi, Osaka, and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed June 19, 1974, Ser. No. 480,787
Claims priority, application Japan Dec. 25, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

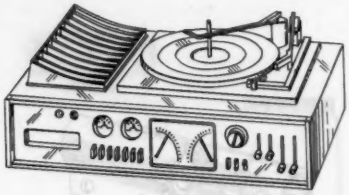


240,452
PORTABLE RADIO
Shuhei Taguchi, Moriguchi, Osaka, Hironosuke Koda, Kyoto, and Tsutomu Murakami, Neyagawa, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 30, 1974, Ser. No. 519,175
Claims priority, application Japan June 25, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

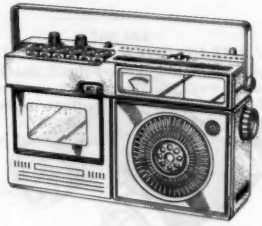
240,453
RADIO RECEIVER
Takao Okada, Kyoto, Ken Kawamura, Ibaragi, Osaka, and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Nov. 5, 1974, Ser. No. 521,019
Claims priority, application Japan June 7, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



240,454
COMBINED PHONOGRAPH AND CARTRIDGE PLAYER
Leonard Kaye, Westfield, N.J., assignor to Capehart Corporation, New York, N.Y.
Filed Nov. 5, 1974, Ser. No. 521,229
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

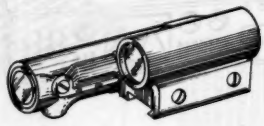


240,455
COMBINED PORTABLE RADIO AND CASSETTE PLAYER
Takeyoshi Kawano, Kyoto, and Keizo Kushida, Moriguchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Nov. 7, 1974, Ser. No. 521,802
Claims priority, application Japan June 19, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

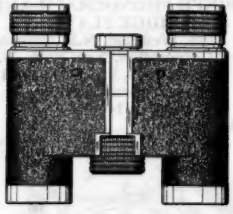


240,456
COMBINED PHONOGRAPH AND CARTRIDGE PLAYER
Leonard Kaye, Westfield, N.J., assignor to Capehart Corporation, New York, N.Y.
Filed Nov. 25, 1974, Ser. No. 526,519
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

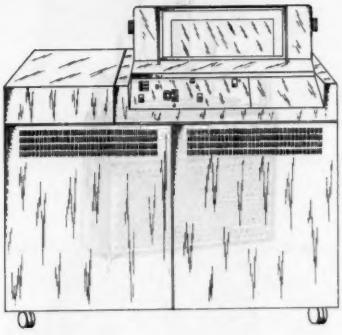
240,457
OPTICAL SIGHT FOR FIREARMS
Norman D. Dunlap, New Bremen, Ohio, and Glenn E. Ricket, Huntington, Ind., assignors to Precision Tool and Machine Co., New Bremen, Ohio
Filed Nov. 19, 1974, Ser. No. 525,094
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—61



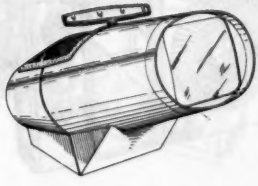
240,458
BINOCULARS
Sataro Takahashi, Saitama, and Tadayuki Kirigaya, Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha
Filed June 5, 1975, Ser. No. 583,976
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—63



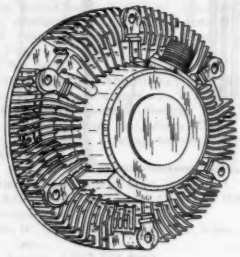
240,459
CONTROL UNIT WITH PRINTER
Ronald I. Conway, Port Ewen, John J. Natoli, Woodstock, and John V. Stram, Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 29, 1974, Ser. No. 501,737
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



240,460
REAR PROJECTION TRANSPARENCY VIEWER
Robert M. Simonelli, Palatine, Ill., assignor to GAF Corporation, New York, N.Y.
Filed Dec. 18, 1974, Ser. No. 534,145
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—17

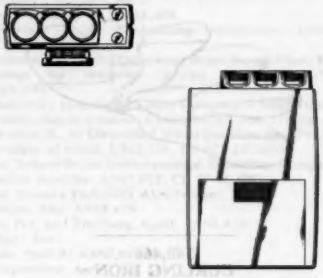


240,461
VISCOUS FAN DRIVE
Wayne K. Leichliter, Rodney H. Detty, and John B. Hill, Marshall, Mich., assignors to Eaton Corporation
Filed Nov. 18, 1974, Ser. No. 524,441
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



240,462
MEDICINAL APPLICATOR OR THE LIKE
Barry H. Dash, Englewood Cliffs, N.J., assignor to American Home Products Corp., New York, N.Y.
Filed May 8, 1974, Ser. No. 468,050
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A

240,463
MEDICAL ELECTRICAL EQUIPMENT CASE
Robert L. Jordan, Coon Rapids, Minn., assignor to Medtronics, Inc., Minneapolis, Minn.
Filed Jan. 10, 1975, Ser. No. 539,998
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



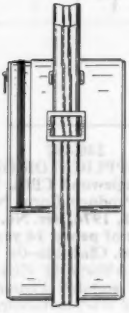
240,464
MEDICINAL APPLICATOR OR THE LIKE
Barry H. Dash, Englewood Cliffs, N.J., assignor to American Home Products Corp., New York, N.Y.
Original design application May 8, 1974, Ser. No. 468,050. Divided and this application Sept. 22, 1975, Ser. No. 615,323
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A

240,465
SET OF CARDS FOR DISPLAYING IDENTIFYING SKIN CONDITION INDICIA FOR COSMETIC PURPOSES
Isozo Yoshida, Tokyo, Japan, assignor to Kanebo Ltd.
Filed Oct. 23, 1973, Ser. No. 408,507
Term of patent 7 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 A

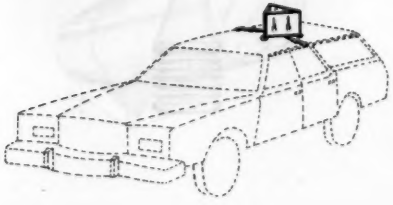
240,466
CURLING IRON
Joseph A. Rinaldi, Oradell, N.J., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 16, 1974, Ser. No. 533,206
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E

240,467
HAIR DRYER HOOD
Norman A. Steinkamp, Chicago Heights, and Bernard B. Bluestein, Des Plaines, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 10, 1975, Ser. No. 540,018
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F

240,468
CARRYING CASE FOR A CAMERA OR THE LIKE
Dianne B. Ainslie, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 22, 1974, Ser. No. 472,406
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E



240,469
AUTOMOBILE ROOF TOP DISPLAY SIGN OR SIMILAR ARTICLE
Harry E. Bissell, Murrysville, Pa., assignor to IDL Inc., Pittsburgh, Pa.
Filed Apr. 29, 1975, Ser. No. 572,904
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Stowell, James K., 3,968,310.

A. Ehrenreich & Cie.: *See—*
Schmidt, Andreas, 3,967,907.

A. H. Robins Company, Incorporated: *See—*
Helsley, Grover C., 3,968,217.

A. Menarini S.A.S.: *See—*
Ghelardoni, Mario; Pestellini, Vittorio; Volterra, Giovanna; and Pisanti, Nicola, 3,968,145.

AB Hydro Betong: *See—*
Georgii, Hans Christer, 3,967,675.

Abblard, Jean Georges: *See—*
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Thiolliere, Jean Pierre; Abblard, Jean Georges; Lacroix, Guy-Bernard; Pillon, Daniel Jean; Ducret, Jacques Joseph; and Thizy, Andre, 3,968,208.

Abbott, Roy W.: *See—*
Pohl, Walter John; and Abbott, Roy W., 3,967,489.

Abdulla, Riaz F.; and Soper, Quentin F., to Eli Lilly and Company. 3,5-Diphenyl-4(1H)-pyridazinones(thiones). 3,967,952, Cl. 71-92.000.

Abel, Heinz; Harris, Melvin; and Massy, Derek James Rowland, to Ciba-Geigy Corporation. Coating fibrous substrates. 3,968,312, Cl. 428-419.000.

Abele, Kurt: *See—*
Hafla, Dietmar; and Abele, Kurt, 3,968,415.

Aberg, Jan. Animal trap. 3,967,408, Cl. 43-87.000.

Abex Corporation: *See—*
Born, Ellis H.; Meisel, William H.; and Viles, Alan H., 3,967,541.

Acrison, Inc.: *See—*
Ferrara, Angelo, 3,967,758.

Adachi, Keiichi; Mikawa, Akikazu; Horie, Ikutaro; and Shiraishi, Hisashi, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material containing anti-fogging agent. 3,967,965, Cl. 96-76.00R.

Adams, Phillip: *See—*
Merianos, John J.; and Adams, Phillip, 3,968,246.

Adamson, James E.: *See—*
Albaric, Jacques E.; and Adamson, James E., 3,968,389.

Addmaster Corporation: *See—*
Busch, Richard E., 3,967,550.

Addressograph Multigraph Corporation: *See—*
Gilbert, Barry D., 3,968,501.

Advanced Instrument Development, Inc.: *See—*
Fiocca, Louis L., 3,968,413.

Aerojet-General Corporation: *See—*
Steele, Roger B.; and Katzakian, Arthur, Jr., 3,968,135.

Aeronca, Inc.: *See—*
Logsdon, Hillard Glenn, 3,967,642.
Logsdon, Hillard Glenn, 3,967,779.

Affeldt, Richard B., to Union Carbide Corporation. Closure for galvanic dry cells. 3,967,977, Cl. 136-133.000.

AGFA-Gevaert, A.G.: *See—*
Himmelmann, Wolfgang; Balle, Gerhard; Nittel, Fritz; and Saleck, Wilhelm, 3,967,966.
Winkler, Alfred; and Schroder, Rolf, 3,968,509.

Aida Engineering Kabushiki Kaisha: *See—*
Kuroyahagi, Moritaka; Kimura, Yoshinobu; Takeuchi, Hirotoku; and Takegami, Masao, 3,967,483.

Air Products and Chemicals, Inc.: *See—*
Cormier, Thomas E.; and McAuley, William J., 3,967,464.
Manning, Richard William, 3,968,341.

Aisin Seiki Kabushiki Kaisha: *See—*
Torii, Nozomu; and Furuya, Yosikatsu, 3,967,844.

Akashi, Mitsumasa: *See—*
Ono, Isao; Iguni, Tetsuo; and Akashi, Mitsumasa, 3,968,165.

Akeley, Lloyd T., to Beckman Instruments, Inc. Differential pressure transmitter with low side overrange protection. 3,967,504, Cl. 73-407.00R.

Akin, Cavit; and Schnell, Philip George, to Standard Oil Company. Process for the production of high-protein pasta utilizing dried yeast and the resulting product. 3,968,258, Cl. 426-62.000.

Aktiebolaget Svenska Flaktfabriken: *See—*
Pain, Barrie Reginald Kirby; and Wilhelmsson, Gunnar Robert, 3,967,942.

Aktiengesellschaft Oederlin & Cie: *See—*
Amblank, Robert, 3,967,649.

Albaric, Jacques E.; and Adamson, James E., to Westinghouse Electric Corporation. Dynamoelectric machine with water-cooled rotor. 3,968,389, Cl. 310-61.000.

Albert, Kenneth J., to Thermo Seal. Drinking receptacle valve means. 3,967,748, Cl. 220-90.400.

Alberts, Heinrich: *See—*
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Albertson, Noel F., to Sterling Drug Inc. 1,2,3,4,5,6,7,8,9,10-Decahydro-8-oxo-2,6-methano-3-benzazocines. 3,968,114, Cl. 260-293.540.

Albrecht, Leonard N., to Tab Products Company. Tape reel hanger. 3,967,733, Cl. 211-113.000.

Aledyne Corporation: *See—*
Northcutt, Michael E., 3,967,690.

Allen-Bradley Company: *See—*
Windler, Harold W., 3,968,409.

Allen, Gordon Y. R. Neutralizing transformer. 3,968,408, Cl. 317-17.000.

Allen, Kenneth M.; and Fijalkowski, Brian R., to Allen, Kenneth M. Apparatus for orienting tapered articles. 3,967,724, Cl. 198-268.000.

Allen, Robert F., to Eastman Kodak Company. Conduit for processing webs with a liquid solution. 3,968,510, Cl. 354-319.000.

Allen, William R., to Diversified Wood Products, Inc. Process for the preservation of wood. 3,968,276, Cl. 427-297.000.

Allington, Robert W., to Instrumentation Specialties Company. Heat of interaction detector. 3,967,492, Cl. 73-61.10C.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Ekstrom, Ake, 3,968,419.
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Alston, Inc.: *See—*
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Alza Corporation: *See—*
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Amana Refrigeration, Inc.: *See—*
Hays, Herbert G.; and Maxwell, Richard D., 3,967,590.

Amblank, Robert, to Aktiengesellschaft Oederlin & Cie. Mixing valve assembly. 3,967,649, Cl. 137-636.300.

Ameling, Bernhard, to Thies KG. Process for the wet treatment of textiles. 3,967,923, Cl. 8-149.100.

American Agtech, Inc.: *See—*
MacMurray, Robert R., 3,967,953.

American Can Company: *See—*
Kubacki, Edward F.; Backe, Bengt S.; Gold, Vance B.; Jessogne, Harold J.; Kudert, Frederick G.; Lemke, Harold C.; and Timmins, William D., 3,967,482.

American Cyanamid Company: *See—*
Brand, William Wayne; and Schrider, Michael Stanley, 3,968,244.
Schrider, Michael Stanley; Poeschel, Gordon Paul; and Annand, Anthony Morris, 3,968,207.
Stamm, Robert Franz; Brincn, Jacob Solomon; Tennant, Evalyn Hosterman; and Halverson, Frederick, 3,968,051.
Wright, William Blythe, Jr., 3,968,230.

American Filtrona Corporation: *See—*
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American Locker Company, Inc.: *See—*
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American Potato Company: *See—*
Shatila, Mounir A.; and Terrell, Robert M., 3,968,260.
Shatila, Mounir A.; and Beck, Roderick G., 3,968,265.

Ammon, Harry C., to Idaho Norland Corporation. Bead dispensing gun for marking pavement. 3,967,784, Cl. 239-583.000.

Amoy Research and Development Co.: *See—*
Goettl, Adam D.; and Goettl, Bruce A., 3,967,322.

Anacker, Charles D. Multi purpose table. 3,967,562, Cl. 108-12.000.

Anand, Yoginder, to Microwave Associates, Inc. Zero-bias Schottky barrier detector diodes. 3,968,272, Cl. 427-84.000.

Anania, James A., Sr. Educational game having a random number selector. 3,967,825, Cl. 273-135.00B.

Anchor Hocking Corporation: *See—*
Brown, William; and Shonebarger, Francis J., 3,968,279.
Ellis, Warren L., 3,967,847.
Seeley, Clarence E., 3,967,943.

Andeen, Richard E., to Sperry Rand Corporation. Torque control system for reaction wheel assemblies and the like. 3,968,352, Cl. 235-150.100.

Andersen, Edward O., to General Electric Company. Electrical switch and method of calibrating. 3,968,468, Cl. 337-107.000.

Anderson, Ray C. Fish lure. 3,967,406, Cl. 43-42.240.

Andre, Jacques Maurice Jules Ghislain; Cahen, Raymond Mark; Debus, Henri Robert; Lammers, Rene Odon; and van Thillo, Hugo Johannes, to Labofina S.A. Preparation of spheroidal alumina particles. 3,968,225, Cl. 423-626.000.

Andreades, Sam; and Baird, Richard L., to Du Pont de Nemours, E. I., and Company. Perfluoralkylcyanocyclopropenes. 3,968,137, Cl. 260-464.000.

Anfruns, Luis Sentis. Shoe. 3,967,390, Cl. 36-94.000.

Angleman, John D. Two-way, selective directional, image-transfer sheet. 3,968,299, Cl. 428-307.000.

Annand, Anthony Morris: *See—*
Schrider, Michael Stanley; Poeschel, Gordon Paul; and Annand, Anthony Morris, 3,968,207.

Anzai, Hisao: *See—*
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Aono, Yukinaga: *See—*
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Archer, Robert A., to Eli Lilly and Company. Dihydroxyhexahydrodibenzo[b,d]pyrans. 3,968,125, Cl. 260-345.300.

Arff, Uwe F.; and Hatton, Ronald J., to Outboard Marine Corporation. Saw chain guiding arrangement. 3,967,378, Cl. 30-383.000.

Arieh, Simon, to Battelle Memorial Institute. Belt conveyors. 3,967,720, Cl. 198-193.000.

Arioli, Ameda: *See—*
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Arioli, Lorenza: *See—*
Arioli, Roberto; Arioli, Ameda; Arioli, Lorenza; and Rezzonica, Carlo, 3,967,473.

Arioli, Roberto; Arioli, Ameda; Arioli, Lorenza; and Rezzonica, Carlo. Equipment for selective steam treatment of continuous fabric pieces. 3,967,473, Cl. 68-5.00D.

Arkhangelskaya, Natalya Vitalievna: *See—*
Grinev, Alexei Nikolaevich; Stolyarchuk, Alexandr Alexandrovich; Galenko-Yaroshevsky, Pavel Alexandrovich; Tantsjura, Vladimir Spiridonovich; and Arkhangelskaya, Natalya Vitalievna, 3,968,237.

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Armco Steel Corporation: *See—*
Dishun, Thomas R., 3,967,501.

Armor Elevator Company, Inc.: *See—*
Tur, Charles J.; and Kopydlowski, Donald J., 3,967,700.

Armour, Frank K., to Interlake, Inc. Collection device for coke oven gases. 3,968,014, Cl. 202-263.000.

Armstrong Cork Company: *See—*
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Dees, Martin, Jr.; and Karcheski, Debra M., 3,968,290.
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Arndt, Heinz-Herbert; Burtscher, Joachim; Fischer, Gustav; Haas, Ernst; Martin, Joachim; Raab, Gunter; and Schnoeller, Manfred, to Siemens Aktiengesellschaft. Method of doping a semiconductor layer. 3,967,982, Cl. 148-1.500.

Arnold, Richard B., to General Electric Company. Apparatus and method for use in winding coils. 3,967,658, Cl. 140-92.100.

Arnoux, Daniel, to Chauvin Arnoux. Direct current electromagnetic assembly operating on alternating-current mains. 3,968,406, Cl. 317-14.00B.

Artzberger, Thomas G., to Kelley Company, Inc. Return to dock level mechanism for a dockboard. 3,967,337, Cl. 14-71.700.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Okawa, Isao, 3,967,693.

Asai, Harumi; and Wada, Akira, to Nippon Zeon Co., Ltd. Process for preparing a thermoplastic resin. 3,968,088, Cl. 526-283.000.

Asai, Osamu: *See—*
Hanazono, Masanobu; Asai, Osamu; Fuyama, Moriaki; Iimura, Masao; Yagi, Hideyuki; and Okamura, Masahiro, 3,968,019.

Asberg, Sture L., to SKF Industrial Trading and Development Company, B.V. Spindle for a vehicle wheel, provided with at least one ball joint. 3,967,857, Cl. 301-125.000.

Asfour, Emil S. Apparatus for sorting tobacco leaves. 3,968,366, Cl. 250-239.000.

Asfura, Abraham C. Miselem. Multiple rotary syphon for condensate removal from a steam-heated rotary cylinder. 3,967,386, Cl. 34-124.000.

Asselman, George Albert Apolonia; Van Mal, Harmannus Hinderikus; and Mijnheer, Andries, to U.S. Philips Corporation. Container for storing and transporting a liquefied gas. 3,967,465, Cl. 62-48.000.

Association pour la Rationalisation et la Mechanisation de l'Exploitation Forestiere: *See—*
Loigerot, Jean, 3,967,663.

Asturiana de Zinc S.A.: *See—*
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Atara Corporation: *See—*
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Atkinson, Joseph G.; Rokach, Joshua; and Rooney, Clarence S., to Merck & Co., Inc. 2-Aminomethyl-5-hydroxy-4H-pyran-4-one and derivatives thereof. 3,968,236, Cl. 424-283.000.

Atlantic Richfield Company: *See—*
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Atwell, Charles Gary; Tew, Gilbert W.; Kraft, Gerald A.; and Faries, Joseph A., Jr., to Philip Morris Incorporated. Cigarette filter rod transfer apparatus. 3,967,858, Cl. 302-2.00R.

Audry, Claudette: *See—*
Gadessaud, Robert; and Audry, Claudette, 3,967,976.

Ault, Robert L.; and Kelly, Nathan, to Epic Metals Corporation. Reinforced composite slab assembly. 3,967,426, Cl. 52-252.000.

Ayano, Masami: *See—*
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Dickens, Elmer Douglas, Jr., 3,968,081.
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Solomon, Thomas S., 3,968,295.

Baader, Joseph E. Warning light assembly. 3,968,358, Cl. 240-41.550.

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Ryan, John Patrick; Cowan, James Walter; Sharp, Paul Kent; Fess, Marilyn Elaine; and Babcock, James L., 3,967,321.

Babiec, John S., Jr.; and Turley, Richard J., to Olin Corporation. Halogenated acetals. 3,968,170, Cl. 260-615.00A.

Bach, Lloyd Gene, to Bendix Corporation, The. Pneumatic and hydraulic power brake apparatus. 3,967,536, Cl. 91-371.000.

Bach, Nicholas J.; and Kornfeld, Edmund C., to Eli Lilly and Company. 8,8-Disubstituted-6-methylergolines and related compounds. 3,968,111, Cl. 260-285.500.

Bach, Nicholas J.: *See—*
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Backderf, Richard H.: *See—*
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Backe, Bengt S.: *See—*
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Backus, James H.; and Cornwell, Charles E. Dustless mixing apparatus and method for combining materials. 3,967,815, Cl. 259-148.000.

Bagley, Stuart C., to Armac Enterprises, Inc. Ball separating device for pool tables and the like. 3,967,821, Cl. 273-11.00C.

Baird, Richard L.: *See—*
Andreades, Sam; and Baird, Richard L., 3,968,137.

Bakay, Carl James, to Union Carbide Corporation. Process for making silane. 3,968,199, Cl. 423-347.000.

Baker, Curtis K., to United States of America, Navy. Bomb rack sway bolt assembly. 3,967,528, Cl. 89-1.50B.

Baker, Edward A., Jr., to E. Baker and Associates, Inc. Storage system. 3,967,868, Cl. 312-201.000.

Baker, Howard W. Reusable containers for citrus fruit and the like. 3,967,772, Cl. 229-18.000.

Baker, James D., to Honeywell Inc. Object classification and counting machine having correction apparatus for removing bias from count. 3,968,351, Cl. 235-92.0PC.

Baker, John. Controlling the supply of electric current to a room. 3,967,545, Cl. 98-43.00A.

Baker, LeRoy S.: *See—*
Simokat, Frank L.; and Baker, LeRoy S., 3,968,333.

Baldwin, Brian E.; and Tischlinger, Edward A., to MPL, Inc. Syringe assembly with contained pop-out elastic plug seal. 3,967,759, Cl. 222-145.000.

Baldwin, Francis P.; and Malatesta, Alberto. Preparation of modified elastomers. 3,968,185, Cl. 260-880.00R.

Baldwin, Francis P.: *See—*
Gessler, Albert M.; and Baldwin, Francis P., 3,968,076.

Balk, Hermann, to Reifenhauser KG. Bonded slit foils. 3,968,287, Cl. 428-136.000.

Ball Brothers Research Corporation: *See—*
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Barak, Morton: *See—*
Winchell, Harry S.; Barak, Morton; and Van Fleet, Parmer, III, 3,968,221.

Barish, Robert A., to Johnson & Johnson. Wet wipe dispenser. 3,967,756, Cl. 221-45.000.

Barna, James Julius, to Johns-Manville Corporation. Asbestos fiber and organic polymeric binder heat reaction products and method of forming same. 3,968,072, Cl. 260-40.00R.

Barnes, Miles W. Trench shoring apparatus. 3,967,454, Cl. 61-41.00A.

Barnett, Jerry Gary: *See—*
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Barr, Thomas A., Jr.: *See—*
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Barth, Wayne E., to Pfizer Inc. Method of preventing asthmatic symptoms. 3,968,213, Cl. 424-251.000.

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Bauer, Everhard. Apparatus for distributing articles supplied along one path to several paths. 3,967,717, Cl. 198-31.0AA.

Bauer, Richard A.: *See—*
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Baugher, William Lewis, to Procter & Gamble Company, The. Low density frozen dessert. 3,968,266, Cl. 426-566.000.

Baughman, George W. Signal system for high speed trains. 3,967,801, Cl. 246-34.00R.

Bauzil, Vincent. Connecting channel between two different water levels. 3,967,453, Cl. 61-30.000.

Baxter Laboratories, Inc.: *See—*
Rodriguez, Rodolfo R., 3,967,901.
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Wolf, Karlheinz; Hornle, Reinhold; Kunzelmann, Hans; and Hild, Theodor, 3,967,922.

Baylac, Bernard; Poujois, Robert; and Ripert, Jacques, to Commissariat a l'Energie Atomique. Method of amplitude-frequency conversion and a converter which operates in accordance with said method. 3,968,447, Cl. 328-151.000.

BBC Brown Boveri & Company Limited: *See—*
Blank, Karl, 3,968,391.

Beale, John H.: *See—*
Moss, Ernest K.; and Beale, John H., 3,968,300.

Beauchet, Jean, to Societe Nouvelle de Roulements. Fixed-adjustment hub for spoked bicycle wheels. 3,967,856, Cl. 301-105.00B.

Beck, Dieter; Schenker, Karl; and Rossi, Alberto, to Ciba-Geigy Corporation. Hydronaphthalene carboxylic acids and derivatives. 3,968,142, Cl. 260-469.000.

Beck, Earl J. Ocean thermal gradient power plant. 3,967,449, Cl. 60-641.000.

Beck, Roderick G.: *See—*
Shatila, Mounir A.; and Beck, Roderick G., 3,968,265.

Beck, William P.; Carr, Francis L.; Chapin, Howard R.; and Bast, Gordon, to Sunbeam Corporation. Shaver with adjustable long hair trimmer. 3,967,372, Cl. 30-34.100.

Becker & van Hullen Niederrheinische Maschinenfabrik: *See—*
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Beckham, Robert R., to Libbey-Owens-Ford Company. Material handling apparatus. 3,967,723, Cl. 198-235.000.

Beckman Instruments, Inc.: *See—*
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Bedard, Joseph A.; and Hills, Roger G., to IRECO Industries, Inc. Clutch assembly. 3,967,641, Cl. 137-344.000.

Beecham Group Limited: *See—*
Mamalis, Patrick; La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,968,220.

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Lancor, Joseph H., Jr., deceased; and Ferrari, Leonard A., 3,968,506.
Wells, Thomas R., 3,967,890.

Bell, Malcolm R.; and Zalay, Andrew W., to Sterling Drug Inc. 1,2-Diphenyl-4,5,6,7-tetrahydroindoles. 3,968,121, Cl. 260-326.13R.

Bell, Robert J.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Bendix Corporation, The: *See—*
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Rachel, Todd L., 3,967,598.
Tyler, Henry P., 3,967,533.

Benefiel, Robert Lee; and Krumkalns, Eriks Viktors, to Eli Lilly and Company. Fluoroalkoxyphenyl-substituted nitrogen heterocycles as plant stunting agents. 3,967,949, Cl. 71-76.000.

Bengt Lundin AB: *See—*
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Benilite Corporation of America: *See—*
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Bennett, Marlin J.: *See—*
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Berg, Richard E., to Honeywell Inc. Filter system for infrared analysis. 3,968,367, Cl. 250-339.000.

Bergersen, Earl O. Preformed anterior labial retainer. 3,967,379, Cl. 32-14.00B.

Bergmaier, Gerard J. Coin-stacking and counting device. 3,967,435, Cl. 53-254.000.

Bergwerksverband GmbH: *See—*
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Luft, Karl Friedrich, 3,968,370.

Beriere, Louis Joseph Gerardus, to U.S. Philips Corporation. Television receiver with noise immune AFC circuit. 3,968,325, Cl. 178-5.8AF.

Beriger, Ernst: *See—*
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Bernett, Frank E.: *See—*
Weiant, David S.; Bernett, Frank E.; and Velivis, William R., 3,967,429.

Berney, Jean-Claude. Electric watch having an electromechanical movement including a correction mechanism for small errors. 3,967,442, Cl. 58-23.00R.

Bernstein, Jack; and Stearns, Barbara, to E. R. Squibb & Sons, Inc. Method of treating malignant neoplastic disease. 3,968,249, Cl. 424-322.000.

Bertram, Heidrun; Fahnenstich, Rudolf; and Tanner, Herbert, to Deutsche Gold- und Silber-Scheidcanstalt vormals Roessler. Feed additive for ruminants. 3,968,253, Cl. 426-2.000.

Bertschy, Pierre Yves: *See—*
Groux, Michel John Arthur; Dalan, Ernesto; Kruseman, Jan; and Bertschy, Pierre Yves, 3,968,097.

Bethlehem Steel Corporation: *See—*
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Betty, Robert Warren, to Du Pont of Canada Limited. Dimensional stabilization of lignocellulosic materials. 3,968,318, Cl. 428-511.000.

Beyer, Ralph E.: *See—*
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BF Kogyo Kaisha, Ltd.: *See—*
Hirano, Itsuro; Uchiyama, Mitsuru; and Satoh, Masao, 3,967,940.

Bianchetta, Donald L., to Caterpillar Tractor Co. Hydraulic control valve assembly with diverse circuit adaptability. 3,967,640, Cl. 137-269.000.

Bibeault, Lionel J.: *See—*
Stanley, Ralph W.; Compton, Norman G.; and Bibeault, Lionel J., 3,967,671.

Bickel, Johanna, to J. Pfrimmer and Co. Infusion solution for the treatment of tachycardiac disturbances of heart rhythm and use thereof. 3,968,205, Cl. 424-153.000.

Bickis, George J., Sr., to Indenco, Inc. Buckle construction. 3,967,347, Cl. 24-74.00A.

Bier, Kenneth C., to Colt Industries Operating Corporation. Method and apparatus for varying fuel flow from a variable venturi carburetor to compensate for changes in barometric pressure and altitude. 3,968,189, Cl. 261-39.00A.

Bilbrey, Robert A., to California Controls Company. Pneumatic control system. 3,967,577, Cl. 116-65.000.

Billot, Jean, to Rafaut & Cie. Control mechanism. 3,967,506, Cl. 74-2.000.

Bingham, Joseph Peter, to RCA Corporation. Single frame color encoding/decoding system. 3,968,515, Cl. 358-5.000.

Birglechner, Georg; and Botzenhardt, Leonard, to Licentia Patent-Verwaltungs-G.m.b.H. Method of contacting contact points of a semiconductor body. 3,967,366, Cl. 29-588.000.

Birkenstock, Dieter; and Jager, Otto, to Gebr. Hofmann KG. System for compensating the unbalance of a rotating body, especially of a grinding wheel. 3,967,416, Cl. 51-169.000.

Birmingham Small Arms Company Limited: *See—*
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Birum, Gail H.; and Losee, Michael L., to Monsanto Company. Process for preparing the pentacrythritol ester of phosphorohalidous acid. 3,968,188, Cl. 260-976.000.

Bishop, Marilyn. Method for making sterile connections. 3,968,195, Cl. 264-154.000.

Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Method of inhibiting histamine activity with guanidine compounds. 3,968,216, Cl. 424-263.000.

Blackwell, Henry Wayne, to Dresser Industries, Inc. Stuffing box control system. 3,967,678, Cl. 166-53.000.

Blanchet, Lucien, to Elhyco AG. Clamp with grounding means for holding conductors between parallel support rails. 3,968,323, Cl. 174-135.000.

Blank, Karl, to BBC Brown Boveri & Company Limited. Brush holder for electrical apparatus. 3,968,391, Cl. 310-240.000.

Blatz, Glenroy G.: *See—*
Brock, Herbert; Blatz, Glenroy G.; and Honn, James B., 3,967,544.

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Bock, Manfred Klaus Joachim, deceased (by Bock, Ingrid Alida Anni, heiress), to Heyl & Co. Chemisch-Pharmazeutische Fabrik, Firma. Method of producing penicillamine. 3,968,154, Cl. 260-534.00S.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See—*
Henninger, Heinz Willi; Riethmuller, Lothar; Kiefer, Hans Walter; and Spreitzhofer, Ernst Gunther Robert, 3,967,900.

Boduch, Stanley W., to Dart Industries Inc. Stackable lid and container. 3,967,731, Cl. 206-508.000.

Boehringer Mannheim G.m.b.H.: *See—*
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Bogaard, Johan Josephus Hendricus: *See—*
Groot, Theodorus Cornelis; and Bogaard, Johan Josephus Hendricus, 3,967,945.

Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Control of insects and acarids with O-(2-vinylphenyl)-thiolphosphates. 3,968,223, Cl. 424-219.000.

Bohner, Beat: *See—*
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Boiten, Ebbe, to U.S. Philips Corporation. Shaving head for a dry-shaving apparatus. 3,967,374, Cl. 30-43.920.

Bolan, Joseph A., to Drackett Company, The. Drain cleaning compositions. 3,968,048, Cl. 252-157.000.

Bolex International SA: *See—*
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Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., to General Electric Company. Radiation curable inks. 3,968,056, Cl. 252-514.000.

Bolssens, Frans Pharailda Jozef; and Franck, Guy Charles Joseph Leon Gilbert Ghislain Marie, to International Standard Electric Corporation. Wire skinning and wrapping tool. 3,967,357, Cl. 29-203.00D.

Bonaddio, Robert M., to PPG Industries, Inc. Glass scoring head and method. 3,967,517, Cl. 83-7.000.

Bonfiglioli, Sergio. Process and machine for wrapping and packaging items in stretchable foil material. 3,967,433, Cl. 53-30.00R.

Booth, Raymond E., to Sam Stein Associates, Inc. Compact in-line breading machine. 3,967,583, Cl. 118-16.000.

Boothe, Jerry Emile: *See—*
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Borge, Kjell S., to Vera Fabrikker A/S. Pipes. 3,967,650, Cl. 138-144.000.

Born, Ellis H.; Meisel, William H.; and Viles, Alan H., to Abex Corporation. Control system for axial piston fluid energy translating device. 3,967,541, Cl. 92-12.200.

Bosa, Primo: *See—*
Eng, Jeffrey D.; Harke, Cyril J.; Bosa, Primo; and Figueras, Wilfredo E., 3,968,022.

Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, to Bayer Aktiengesellschaft. 1,4-Dihydropyridines. 3,968,117, Cl. 260-295.50R.

Bost, Pierre-Etienne: *See—*
Lartigau, Guy; and Bost, Pierre-Etienne, 3,968,162.

Botkin, Albert L. Canning closure and method. 3,967,746, Cl. 215-260.000.

Botzenhardt, Leonard: *See—*
Birglechner, Georg; and Botzenhardt, Leonard, 3,967,366.

Boucher, Raymond Marcel Gut, to Wave Energy Systems, Inc. Method and sporicidal compositions for synergistic disinfection or sterilization. 3,968,248, Cl. 424-333.000.

Boucher, Raymond Marcel Gut, to Wave Energy Systems, Inc. Method and sporicidal compositions for synergistic disinfection or sterilization. 3,968,250, Cl. 424-333.000.

Bouillon, Claude; and Vayssie, Charles, to L'Oreal. Cosmetic composition containing a hydroxylated amino thioether for application to the hair and skin. 3,968,218, Cl. 424-267.000.

Boutle, David Leonard: *See—*
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Bovio, Michele, to Ing. C. Olivetti & C., S.p.A. Electronic keyboard. 3,968,488, Cl. 340-365.00C.

Bowen, John G.: *See—*
Seitz, Lamont J.; and Bowen, John G., 3,967,934.

Bower, John E., Jr., to United States Steel Corporation. Continuous-casting mold with minimal thermal restraint and method of making. 3,967,673, Cl. 164-82.000.

Boyd, Mervin S., to Lawrence Peska Associates, Inc.; and Krystic, Allan, part interest to each. Baby feeding device. 3,967,333, Cl. 5-317.00R.

Boynton, Kenneth G., to Hollis Engineering, Inc. System for cleaning work pieces with solvent. 3,968,013, Cl. 202-170.000.

Boysen, Robert L., to Union Carbide Corporation. Coaxial cable with improved properties. 3,968,463, Cl. 333-96.000.

Bradfield, C. C. Floating dock boat lift. 3,967,570, Cl. 114-45.000.

Brady, Barbara Jean, executrix: *See—*
Brady, Edward R., deceased, 3,967,490.

Brady, Edward R., deceased (by Brady, Barbara Jean, executrix), to International Telephone and Telegraph Corporation. Vibration densitometer. 3,967,490, Cl. 73-32.00A.

Brand, William Wayne; and Schrider, Michael Stanley, to American Cyanamid Company. Chemosterilant and larvicidal imidothiocarbonates. 3,968,244, Cl. 424-330.000.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, 3,967,710.

Brando, Pasquale: *See—*
Rosa, Giovanni; and Brando, Pasquale, 3,967,461.

Brede, Uwe: *See—*
Gawlick, Heinz; and Brede, Uwe, 3,967,555.

Breitschwerdt, Werner, to Daimler-Benz Aktiengesellschaft. Window lifter of a motor vehicle. 3,967,511, Cl. 74-625.000.

Brickner, Sheldon: *See—*
Rosenberg, Melvin; and Brickner, Sheldon, 3,967,351.

Brickwood, Alan J., to Molchurst Limited. Tires. 3,967,670, Cl. 152-337.000.

Bridgestone Tire Company Limited: *See—*
Honda, Toshio; Tanaka, Shoji; Fukuura, Yukio; Suzuki, Yoshikatsu; Tanuma, Itsuo; Iwami, Koichi; and Shibata, Shoson, 3,968,198.
Inoue, Sakae; Nishi, Toshio; Shibata, Shoson; Matsunaga, Tsutomu; and Kaneko, Yoshio, 3,968,182.
Yukuta, Toshio; and Ohashi, Takashi, 3,968,084.

Brinen, Jacob Solomon: *See—*
Stamm, Robert Franz; Brinen, Jacob Solomon; Tennant, Evalyn Hosterman; and Halverson, Frederick, 3,968,051.

British Industrial Plastics Limited: *See—*
Ogden, Dennis Henry, 3,967,704.

Brock, George W.; and Shelledy, Frank B., to International Business Machines Corporation. Method for manufacturing and using an internally biased magnetoresistive magnetic transducer. 3,967,368, Cl. 29-603.000.

Brock, Herbert; Blatz, Glenroy G.; and Honn, James B., to National Petro Chemicals Corporation. Grocery sack process and machine. 3,967,544, Cl. 93-35.0SB.

Brody, Frank A.; Merz, Emil K.; and Van den Houten, Peter, to United States of America, Army. Propellant grain support apparatus. 3,967,558, Cl. 102-99.000.

Brooks, Barry R. Time telling teaching aid. 3,967,389, Cl. 35-39.000.

Brown, Arthur V., Jr.: *See—*
Payne, Bernard M.; Cloute, John R.; Johnson, Edward A.; Brown, Arthur V., Jr.; and Oborsh, Edward V., 3,968,269.

Brown, Billy E., to Moore-Perk Corporation. Hot/cold applicator system. 3,967,627, Cl. 128-400.000.

Brown, Earle S., Jr.: *See—*
Walker, Wellington E.; and Brown, Earle S., Jr., 3,968,136.

Brown, George A.: *See—*
Goffe, William L.; and Brown, George A., 3,967,959.

Brown, Horace D. Vibrating force sensor. 3,967,497, Cl. 73-141.00R.

Brown, Jack M., to Esterline Electronics Corporation. Magnetic motor. 3,968,470, Cl. 335-230.000.

Brown, Richard E., to Ball Brothers Research Corporation. Mold release composition containing tungsten disulfide. 3,968,302, Cl. 428-328.000.

Brown, William; and Shonebarger, Francis J., to Anchor Hocking Corporation. Method for applying plastisol coating of uniform thickness to glass containers. 3,968,279, Cl. 427-348.000.

Brown, William E. Accessory for a bird bath. 3,967,588, Cl. 119-26.000.

Brown, William G. Hydraulic valve lifter for reciprocating internal combustion engines. 3,967,602, Cl. 123-90.550.

Brunnschweiler, David: *See—*
Wildeman, Arno Edgar; and Brunnschweiler, David, 3,967,472.

Brunswick Corporation: *See—*
Harralson, Joseph H.; and Wurzbach, William F., 3,967,446.

Brunvoll, Geir, to International Standard Electric Corporation. Stabilized antenna platform. 3,968,496, Cl. 343-765.000.

Bryant, Doyle D., to Strand Century Incorporated. Apparatus for controlling the intensity of a light source. 3,968,401, Cl. 315-293.000.

Buchel, Karl Heinz: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; and Plempel, Manfred, 3,968,229.
Regel, Erik; Lurssen, Klaus; and Buchel, Karl Heinz, 3,968,120.

Buchsteiner, Josef: *See—*
Malata, Peter; Buchsteiner, Josef; and Rosenstatter, Otto, 3,967,380.

Buchta, Hans Peter; and Zimlich, Josef, to Heimann GmbH. Pulse discharge lamp, in particular an electronic flash tube. 3,968,392, Cl. 313-198.000.

Budd, Allan L.: *See—*
Etess, Edward; and Budd, Allan L., 3,967,933.

Budlane, Stanley J., to General Electric Company. Detector for radiant heat. 3,968,469, Cl. 337-139.000.

Bui Hai, Nhu, to Thomas-CSF. Antenna with a periscope arrangement. 3,968,497, Cl. 343-781.0CA.

Bulten-Kanthal Aktiebolag: *See—*
Jakesch, Rudolf, 3,967,727.

Bumgardner, Jon H., to United States of America, Navy. Laser receiver anti-sun circuit. 3,968,361, Cl. 250-214.00R.

Bunker Ramo Corporation: *See—*
Holt, Harley Raymond, 3,967,356.

Burke, Edward F., Jr., to MFE Corporation. Line printer with escape mechanism driving means. 3,967,508, Cl. 74-128.000.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Process for preparing high polymer latices from organic solvent dispersions. 3,968,067, Cl. 260-29.60R.

Burkholder, Ward J.; Miller, Glenn E.; and Nagel, Fritz J., to Goodyear Tire & Rubber Company, The. Process for the continuous isolation of dihydric phenols. 3,968,171, Cl. 260-621.00A.

Burkl, Erich: *See—*
Walter, Lothar; Burkl, Erich; Schurger, Rainer; and Olschewski, Armin, 3,967,865.
Burroughs Wellcome Co.: *See—*
Maxwell, Robert Arthur; and Walton, Eric, 3,968,243.
Burtscher, Joachim: *See—*
Arndt, Heinz-Herbert; Burtscher, Joachim; Fischer, Gustav; Haas, Ernst; Martin, Joachim; Raab, Gunter; and Schnoeller, Manfred, 3,967,982.
Busby, Terence Stanley; and Cox, Geoffrey Charles, to National Research Development Corporation. High zirconia containing glass ceramic cement. 3,967,969, Cl. 106-39.600.
Busch, Aloysius J., to Bell Telephone Laboratories, Incorporated. Signaling circuit. 3,968,454, Cl. 331-78.000.
Busch, Richard E., to Addmaster Corporation. Squeeze printer for papers or stacks of papers of varying thicknesses. 3,967,550, Cl. 101-93.180.
Buschfeld, Adolf; Gramse, Manfred; and Simic, Dragomir, to Deutsche Texaco Aktiengesellschaft. Process for the manufacture of chip boards using condensation resins as binders and product. 3,968,308, Cl. 428-402.000.
Bush Manufacturing Company: *See—*
Tarassoli, Iradj, 3,967,736.
Butterworth, George A. M.; and Elias, Robert T., to Johnson & Johnson. Disposable absorbent pad. 3,967,623, Cl. 128-287.000.
Byler, William H., to U.S. Radium Corporation. Optical device for post-operative cataract patients. 3,967,885, Cl. 351-46.000.
Cade, Phillip J., to Electronics Corporation of America. Precision radiation source regulation circuit. 3,967,904, Cl. 356-201.000.
Cagle, Harlan R., to Sahlin International, Inc. Vacuum control system. 3,967,849, Cl. 294-64.00A.
Cahen, Raymond Mark: *See—*
Andre, Jacques Maurice Jules Ghislain; Cahen, Raymond Mark; Debus, Henri Robert; Lammers, Rene Odon; and van Thillo, Hugo Johannes, 3,968,225.
Cailliot, Serge. Method and apparatus for making coffee. 3,967,546, Cl. 99-286.000.
Calabro, Anthony D. Uniformly cooled printed circuit board mounting assembly. 3,967,874, Cl. 339-112.00R.
Calgon Corporation: *See—*
Morgan, Janice Elaine; and Boothe, Jerry Emile, 3,968,037.
California Controls Company: *See—*
Bilbrey, Robert A., 3,967,577.
Camdex, Inc.: *See—*
Leich, Robert A., 3,967,526.
Cameron Iron Works, Inc.: *See—*
Cassity, Thomas G., 3,967,460.
Campbell, Donald K. Rotary power unit. 3,967,594, Cl. 123-8.450.
Campbell, Lyman Lavelle, to Emhart Corporation. Mold holder arms for glassware forming machine and method of operating the same. 3,967,946, Cl. 65-68.000.
Canata, Pierluigi; and Longobardi, Giampiero, to Compagnia Tecnica Industrie Petroli S.p.A.; and Liquichimica S.p.A. Process and an equipment for producing crystalline citric acid from solutions of alkaline citrates. 3,968,017, Cl. 204-180.00P.
Canavan, Dennis M.: *See—*
Currier, George T.; and Canavan, Dennis M., 3,967,523.
Candor, James T.; and Tassone, Joseph V. Method of making a ball tee. 3,967,822, Cl. 273-26.00R.
Cancvari, Gerard P., to Exxon Research and Engineering Company. Apparatus for the treatment of tar sand froth. 3,967,777, Cl. 233-3.000.
Canon Kabushiki Kaisha: *See—*
Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, 3,967,886.
Komine, Yoshio, 3,968,504.
Suzaki, Kuniyoshi; and Uchidoi, Masanori, 3,967,887.
Canron, Inc.: *See—*
Maisonneuve, Hubert; von Beckmann, Helmuth; and Sun, Joseph C., 3,967,396.
Stewart, John Kenneth, 3,967,395.
Capriotti, Alfred J.; and Lazzaretti, Louis G., to United States Steel Corporation. Continuous caster alignment method. 3,967,362, Cl. 29-407.000.
Carborundum Company, The: *See—*
Economy, James; and Lei, George Y., 3,967,925.
Cardy, Charles Frederick; and Lee, Stephen Arthur, to Interox Chemicals Limited. Polyurethane foams prepared by a quasi-prepolymer technique. 3,968,061, Cl. 260-2.5AN.
Carlton, Quinton Healey, to Oleo International Holdings Limited. Liquid dampers. 3,967,707, Cl. 188-284.000.
Carr, Francis L.: *See—*
Beck, William P.; Carr, Francis L.; Chapin, Howard R.; and Bast, Gordon, 3,967,372.
Carrier Corporation: *See—*
St. Laurent, Arthur, 3,967,644.
Sibley, Howard W., 3,968,045.
Traver, Darwin G., 3,967,780.
Carroll, James C.; and Shafer, Clel H., to Phillips Petroleum Company. Method for making pipe end plugs. 3,968,000, Cl. 156-258.000.
Cartner, David J., to Swift Engineering Company, Inc. Continuous or chain broaching machine. 3,967,531, Cl. 90-78.000.
Cartwright, Cyril A.: *See—*
Lane, George C.; Cartwright, Cyril A.; and Elmslie, Keith W., 3,968,018.
Cassity, Thomas G., to Cameron Iron Works, Inc. Apparatus for use in replacing broken guidelines. 3,967,460, Cl. 61-72.300.
Caterpillar Tractor Co.: *See—*
Bianchetta, Donald L., 3,967,640.
Cole, Carroll R.; Guhl, Richard E.; and Logemann, Larry R., 3,967,709.
Cryder, John R.; and Wirtz, Edward A., 3,967,534.
Heinold, Lloyd K.; and Livesay, Richard E., 3,967,399.
Jackson, George James, 3,967,637.
Kokaly, Joseph, 3,967,532.
McFall, Robert A., 3,967,840.
Merkel, Russell Dwane; and Lanz, William Edwin, 3,967,361.
Stepe, Visvaldis A., 3,967,398.
Waddell, Bennett N., 3,967,695.
Wesner, Michael D.; and Nauman, Harold J., 3,967,495.
Catnic Components Ltd.: *See—*
Robinson, Brian, 3,967,419.
Caton, William M., to United States of America, Navy. Optical waveguide coupler. 3,967,878, Cl. 350-96.00C.
Cehelnik, Edwin D.: *See—*
Miclenz, Klaus D.; Mavrodineanu, Radu; and Cehelnik, Edwin D., 3,968,363.
Celotex Corporation, The: *See—*
Moss, Ernest K.; and Beale, John H., 3,968,300.
Central Glass Co., Ltd.: *See—*
Inaba, Hiroshi, 3,968,342.
Cepuritis, Talivaldis, to Johnson & Johnson. Disposable diaper with divaricated adhesive tabs. 3,967,622, Cl. 128-287.000.
CGR Medical Corporation: *See—*
Laughinghouse, Charles Leo, 3,968,372.
Chamberlain, Eugene C.: *See—*
Rybak, Joseph F.; Chamberlain, Eugene C.; Rybak, Paul E.; and Rybak, Stanley W., 3,967,613.
Chambers, Alan F., to Nylite Skate Company of Canada Ltd. Composite skate assembly. 3,967,832, Cl. 280-11.120.
Champion International Corporation: *See—*
Fincher, Handley H., 3,967,332.
Vincent, David N.; and Golden, Ronald, 3,968,060.
Champion Spark Plug Company: *See—*
Dulin, Francis H., 3,968,057.
Chang, Ming-Chao; and Chen, Chun-Ya. Spring coil holding device. 3,967,831, Cl. 279-23.00R.
Chapin, Howard R.: *See—*
Beck, William P.; Carr, Francis L.; Chapin, Howard R.; and Bast, Gordon, 3,967,372.
Chappell, Robert L.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Bicyclic fragrance materials and processes therefor. 3,967,629, Cl. 131-144.000.
Charles, Joel M.; and Fourtier, Maurice Roger, to Etat Francais represente par le Delegue Ministeriel pour l'Armement. Apparatus for stabilizing underwater devices. 3,967,573, Cl. 115-6.000.
Chauvin Arnoux: *See—*
Arnoux, Daniel, 3,968,406.
Chelton, Raymond G.: *See—*
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Chembond Corporation: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
Kaufhold, Manfred; and Kett, Harald, 3,968,177.
Chen, Chun-Ya: *See—*
Chang, Ming-Chao; and Chen, Chun-Ya, 3,967,831.
Chen, James H., to Benilite Corporation of America. Pre-leaching or reduction treatment in the beneficiation of titaniferous iron ores. 3,967,954, Cl. 75-1.00T.
Cheng, Bao-Ding, to Colgate-Palmolive Company. Free flowing nonionic inclusion compounds. 3,968,058, Cl. 252-544.000.
Cherrington, Martin D., to Tidril Corporation. Reaming apparatus. 3,967,689, Cl. 175-391.000.
Cherry, Wesley E.; Dickason, Alan F.; and Hedge, John A., to Sun Ventures, Inc. Catalyst for the oxidation of butane to maleic anhydride. 3,968,054, Cl. 252-468.000.
Chesbro, Edward N. Ground slope indicating instrument. 3,967,381, Cl. 33-1.00H.
Chestnut, Daniel: *See—*
Firstenberg, Morris; Chestnut, Daniel; and Marshall, Edward, 3,967,800.
Chevallier, Marcel, to Formica International Limited. Decorative consolidated laminates and a process for their preparation. 3,968,291, Cl. 428-203.000.
Chevron Research Company: *See—*
Choi, Sam Kwon, 3,968,087.
Harrison, Jonas P., 3,968,127.
Holm, Melvin M., 3,968,025.
Hotten, Bruce W., 3,968,157.
Chia, Enrique C.; and Schoerner, Roger J., to Southwire Company. Method for making a aluminum nickel base alloy electrical conductor. 3,967,983, Cl. 148-2.000.
Chicago Pneumatic Tool Company: *See—*
Lesner, Richard S.; and MacDonald, Murdo A., 3,967,664.
Chicago Specialty Manufacturing Company: *See—*
Halsted, Milton; and Uyeda, Tim M., 3,967,783.

Chikanishi, Kunio: *See—*
Matsuo, Makoto; Suzuki, Takao; Yoshihara, Keisuke; Ikeda, Tuneo; and Chikanishi, Kunio, 3,968,309.

Chimura, Toshihiko; and Iwata, Hirokimi, to Sony Corporation. Apparatus for magnetically recording and/or reproducing video signals and which has a still motion reproducing mode of operation. 3,968,517, Cl. 360-10.000.

Chittom, Charles N. Fan assembly. 3,967,916, Cl. 416-167.000.

Choay, Jean: *See—*
Raby, Claude; and Choay, Jean, 3,968,215.

Choay S.A.: *See—*
Raby, Claude; and Choay, Jean, 3,968,215.

Choi, Sam Kwon, to Chevron Research Company. Polymerization of 2-pyrrolidone. 3,968,087, Cl. 260-78.00P.

Christensen, Donald E., to Gladhart, David, a part interest. Clamp for flexible rope. 3,967,349, Cl. 24-134.0KC.

Christensen, Leon F.; and Robins, Roland K., to ICN Pharmaceuticals, Inc. 8-Substituted cyclic nucleotides by free radical alkylation and acylation. 3,968,101, Cl. 260-211.5OR.

Christensen, Ross L.: *See—*
Robitschek, Paul; and Christensen, Ross L., 3,968,294.

Christoffel, Julius M., Jr., to Gayla Industries, Inc. Box-like kite. 3,967,798, Cl. 244-153.00R.

Christopoulos, John, to Singer Company, The. Circular knitting machine for producing interlock fabric. 3,967,468, Cl. 66-20.000.

Chu, Joseph Y. C.: *See—*
Marsh, Dana G.; and Chu, Joseph Y. C., 3,967,964.

Ciba-Geigy AG: *See—*
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Ciba-Geigy Corporation: *See—*
Abel, Heinz; Harris, Melvin; and Massy, Derek James Rowland, 3,968,312.
Beck, Dieter; Schenker, Karl; and Rossi, Alberto, 3,968,142.
Boger, Manfred; and Drabek, Jozef, 3,968,223.
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Haberli, Roland; and Mollet, Hans, 3,967,921.
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Citrex, Societe Anonyme: *See—*
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Clark, William K.: *See—*
Post, Lloyd D.; Holley, William J.; Clark, William K.; and Hayward, Fredrick R., 3,967,556.

Clauss, Karl; Pietsch, Hartmut; Schmidt, Erwin; and Jensen, Harald, to Hoechst Aktiengesellschaft. Process for the manufacture of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one-2,2-dioxide and its use as sweetener. 3,968,106, Cl. 260-243.00R.

Clauss, Karl; Schmidt, Erwin; Pietsch, Hartmut; and Jensen, Harald, to Hoechst Aktiengesellschaft. Process for the manufacture of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one-2,2-dioxide. 3,968,107, Cl. 260-243.00R.

Claverie, Jean-Marie; Loiseau, Gerard; Mattioda, Georges; Millischer, Rene; and Percheron, Francois, to Produits Chimiques Ugine Kuhlmann. 5-Methylthio-pyrimidine vasodilators. 3,968,214, Cl. 424-251.000.

Claxton, H. Hugh, to Northern Electric Company Limited. Self-closing book holder and support. 3,967,807, Cl. 248-447.000.

Closmann, Philip J.; and Tham, Min Jack, to Shell Oil Company. Producing shale oil from a cavity-surrounded central well. 3,967,853, Cl. 299-4.000.

Cloute, John R.: *See—*
Payne, Bernard M.; Cloute, John R.; Johnson, Edward A.; Brown, Arthur V., Jr.; and Oborsh, Edward V., 3,968,269.

Clune, James P.; and Frost, Robyn N., to International Telephone and Telegraph Corporation. Self ballasted lamp including a fusable device. 3,968,396, Cl. 315-74.000.

Cmolik, Charles F., to Lawrence Peska Associates, Inc., a part interest. Windshield wiper pressure distribution block. 3,967,340, Cl. 15-250.420.

Coffey, Fred Simms; Weaver, Harold Lloyd; and Johnson, Howard Beattie, to Pittsburgh Corning Corporation. Process for making a shaped fibrous article by a vacuum forming process and the shaped fibrous article made thereby. 3,968,004, Cl. 162-152.000.

Coffield, Thomas H.; and Keblys, Kestutis A., to Ethyl Corporation. Method of winning copper, nickel, and other metals. 3,967,958, Cl. 75-103.000.

Coffin, Perley A.; Cook, Philip G.; and Demerjian, Paul D., to General Latex and Chemical Corporation. One-part foamable latex composition. 3,968,285, Cl. 428-95.000.

Coffman, Fredrick M.: *See—*
Johnson, Keith O.; and Coffman, Fredrick M., 3,967,382.

Coffy, Rene Louis: *See—*
Mouille, Rene Louis; Coffy, Rene Louis; Hancart, Michel Aime; and Mao, Daniel, 3,967,918.

Cogas Development Company: *See—*
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Cohen, William A., to Sphero International Company. Anti-friction pressure seal. 3,967,866, Cl. 308-187.100.

Cohn, Harry, Jr.: *See—*
Papsco, William G.; and Cohn, Harry, Jr., 3,967,420.

Cole, Carroll R.; Guhl, Richard E.; and Logemann, Larry R., to Caterpillar Tractor Co. Interlock system for parking brake and transmission control. 3,967,709, Cl. 192-4.00A.

Cole, Donald G. Door-actuated alarm switch. 3,968,337, Cl. 200-61.620.

Colgate-Palmolive Company: *See—*
Cheng, Bao-Ding, 3,968,058.

Collins, Terrence, to American Filtrona Corporation. Circumference gauge and recording method. 3,967,383, Cl. 33-179.000.

Colpaert, James J.: *See—*
Johannesen, Donald D.; and Colpaert, James J., 3,967,705.

Colt Industries Operating Corporation: *See—*
Bier, Kenneth C., 3,968,189.

Combustion Engineering, Inc.: *See—*
Palmer, David Nelson, 3,968,055.

Comer, William T.: *See—*
Gallo, Duane G.; and Comer, William T., 3,968,242.

Comley, Peter Nigel, to Lucas Electrical Company Limited, The. Engine control systems. 3,967,596, Cl. 123-32.0EA.

Commissariat a l'Energie Atomique: *See—*
Baylac, Bernard; Poujois, Robert; and Ripert, Jacques, 3,968,447.

Compagnia Tecnica Industrie Petroli S.p.A.: *See—*
Canata, Pierluigi; and Longobardi, Giampiero, 3,968,017.

Compagnie Generale d'Electricite: *See—*
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Compton, Norman G.: *See—*
Stanley, Ralph W.; Compton, Norman G.; and Bibeault, Lionel J., 3,967,671.

Construction Forms, Inc.: *See—*
Westerlund, Robert E.; and Westerlund, Herbert A., 3,967,837.

Continental Can Company, Inc.: *See—*
Hekal, Ihab M.; and Chelton, Raymond G., 3,968,311.
Ostrem, Obert M., 3,967,754.
Walter, John, 3,967,749.

Continental Gummi-Werke Aktiengesellschaft: *See—*
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Continental Oil Company: *See—*
Fonseca, Anthony G.; and Every, Richard L., 3,967,860.
Fonseca, Anthony G., 3,967,957.

Conveyor Systems, Inc.: *See—*
Peralta, Roberto S.; Duffy, Torrance L., II; and Derflinger, Raymond E., 3,967,737.

Conway, John P., to United States of America, Interior. Controlled yielding rock bolt. 3,967,455, Cl. 61-45.00B.

Cook, Philip G.: *See—*
Coffin, Perley A.; Cook, Philip G.; and Demerjian, Paul D., 3,968,285.

Cook, Robert D.: *See—*
Ingle, Colburn L.; Cook, Robert D.; and Hibbs, Joseph E., 3,967,529.

Cooksey, George E., to United States of America, Army. Manually-operated firearm with forward-moving barrel and pivoted breech block. 3,967,402, Cl. 42-10.000.

Cooksley, Ralph D. Method and apparatus for electrically heating a fluid. 3,968,346, Cl. 219-305.000.

Cooper, Gordon H.: *See—*
Wolverton, Richard A.; and Cooper, Gordon H., 3,967,425.

Cormier, Thomas E.; and McAuley, William J., to Air Products and Chemicals, Inc. Air separation process and system utilizing pressure-swing driers. 3,967,464, Cl. 62-13.000.

Cornwell, Charles E.: *See—*
Backus, James H.; and Cornwell, Charles E., 3,967,815.

Cosden Oil & Chemical Company: *See—*
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Costes, Jean-Raymond: *See—*
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Cote, James W.: *See—*
Strickland, James K.; Hessel, Frank J.; and Cote, James W., 3,967,806.

Coulon, Andre; and Perrin, Rene, to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM). Compound turbine rotor. 3,967,919, Cl. 416-198.00A.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; and Hogg, Walter R., 3,968,429.

Coulter, Wallace H.; and Hogg, Walter R., to Coulter Electronics, Inc. Particle analyzer of the Coulter type including coincidence error correction circuitry. 3,968,429, Cl. 324-71.0CP.

Council of Liverstock Protection, Inc.: *See—*
Prince, Ralph P.; Johnson, David H.; and Giger, Walter, Jr., 3,967,344.

Council of Livestock Protection, Inc.: *See—*
Westervelt, Rudy G.; and Giger, Walter, Jr., 3,967,343.

Coussot, Gerard, to Thomson-CSF. Electromechanical resonance device and its application to filtering of television signals. 3,968,462, Cl. 333-72.000.

Coutts, Barbara, to Lawrence Peska Associates, Inc., a part interest. Bicycle safety warning flag. 3,967,575, Cl. 116-35.00A.

Cowan, James Walter: *See—*
Ryan, John Patrick; Cowan, James Walter; Sharp, Paul Kent; Fess, Marilyn Elaine; and Babcock, James L., 3,967,321.

Cox, Ellis V. Load lifting and transferring device with multiple powered belts. 3,967,328, Cl. 5-81.00R.

Cox, Geoffrey Charles: *See—*
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CPC International Inc.: *See—*
Idaszak, Leo R., 3,967,975.

Crane, Burke J., to Rixson-Firemark, Inc. Photocell smoke detector. 3,968,379, Cl. 250-574.000.

Cressman, Paul J.: *See—*
Watson, P. Keith; Cressman, Paul J.; and LaDonna, Richard V., 3,967,960.

Crook, Douglas L., to Xerox Corporation. Illumination control system. 3,967,895, Cl. 355-8.000.

Cros, Pierre, to Spie-Batignolles; and Societe Generale de Techniques et d'Etudes. Method and an installation for improving the energy balance of installations for processing chemical process streams and especially petroleum refineries. 3,968,030, Cl. 208-347.000.

Croset, Michel; and Nouailles, Noel, to Sescosem- Societe Europeenne des Semi-Conducteurs et de Microelectronique. Methods of manufacturing multilayer interconnections for integrated circuits and to integrated circuits utilizing said method. 3,967,371, Cl. 29-625.000.

Crowe, Kenneth, to Torin Corporation. Method for making a scroll type housing for a centrifugal blower. 3,967,352, Cl. 29-156.40R.

Crown Zellerbach Corporation: *See—*
Wagner, Gary L., 3,967,747.

Cruse, Teddy Howard: *See—*
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Cryder, John R.; and Wirtz, Edward A., to Caterpillar Tractor Co. Hydraulic control system with sequence hydraulic jacks. 3,967,534, Cl. 91-189.00R.

CTS Corporation: *See—*
Zdanys, John, 3,968,338.

Cudzik, Daniel F., to Reynolds Metals Company. Easy-open wall. 3,967,750, Cl. 220-266.000.

Cudzik, Daniel F., to Reynolds Metals Company. Easy-open wall. 3,967,752, Cl. 220-269.000.

Cudzik, Daniel F., to Reynolds Metals Company. Easy-open wall. 3,967,753, Cl. 220-269.000.

Cugini, John A., to Rockwell International Corporation. Weft control device. 3,967,657, Cl. 139-450.000.

Culbertson, Donald L., to National-Standard Company, Wagner-Litho Machinery Division. Utilization of heat pipes for cooling radiation curing systems. 3,967,385, Cl. 34-4.000.

Cunningham, Hugh: *See—*
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,968,021.

Cunningham, Victor Ralph; and Boutle, David Leonard, to Porvair Limited. Artificial leather sheet material. 3,968,293, Cl. 428-213.000.

Currier, George T.; and Canavan, Dennis M. Power driven drum beater. 3,967,523, Cl. 84-422.00R.

Curt G. Joa, Inc.: *See—*
Grosch, George S., 3,967,785.

Curzon, James E., to Phillips Petroleum Company. Repair of cement sheath around well casing. 3,967,681, Cl. 166-277.000.

Cuscurida, Michael; and Speranza, George Phillip, to Jefferson Chemical Company, Inc. Polymer-prepolymer composition prepared by polymerizing an ethylenically unsaturated monomer in the presence of an isocyanate-terminated prepolymer. 3,968,089, Cl. 260-859.00R.

Cutter, James W., to NSC International Corporation. Punching and binding apparatus. 3,967,336, Cl. 11-1.0AC.

CX Corporation: *See—*
Edwards, Gerald L., 3,967,518.

D. Wickham and Company Limited: *See—*
Martin, Derek John, 3,967,703.

Daeschler, Werner; Finkenauer, Hans-Jakob; Frey, Gerhard; Rainer, Hans; and Schramm, Walter, to Linde Aktiengesellschaft. Process for the separation of a gaseous mixture consisting of water vapor, hydrocarbons, and air. 3,967,938, Cl. 55-30.000.

Daimler-Benz Aktiengesellschaft: *See—*
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Dainippon Jochugiku Kabushiki Kaisha: *See—*
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Dainippon Printing Co., Ltd.: *See—*
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Dal Santo, Paul A.; and Marik, Charles J., to Quasar Electronics Corporation. Automatic gain control circuit. 3,968,516, Cl. 358-27.000.

Dalan, Ernesto: *See—*
Groux, Michel John Arthur; Dalan, Ernesto; Kruseman, Jan; and Bertschy, Pierre Yves, 3,968,097.

Dalloro, Leonardo: *See—*
Moreschini, Luciano; Petrini, Guido; and Dalloro, Leonardo, 3,968,149.

Damcs & Moore: *See—*
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Danahey, David W. Alarm system having delay characteristic. 3,968,474, Cl. 340-63.000.

Dart Industries Inc.: *See—*
Boduch, Stanley W., 3,967,731.

Darwood, James R., to T.A.D. Avanti, Inc. Telephone answering apparatus. 3,968,329, Cl. 179-6.00R.

Dassler, Adolf. Gripper elements for sports shoes. 3,967,392, Cl. 36-67.00B.

Davidsohn, Uryon S., to Motorola, Inc. Diffusion guarded metal-oxide-silicon field effect transistors. 3,967,988, Cl. 148-187.000.

Davis, Daniel L., to Lawrence Peska Associates, Inc., a part interest. Interlock for eye setting machine. 3,967,770, Cl. 227-2.000.

Davis, Lewis M., to Sealed Power Corporation. Loading device for installation of rotary engine oil sealing rings. 3,967,359, Cl. 29-235.000.

De Lamar Bed Spring Corporation: *See—*
Glassman, Arthur R., 3,967,331.

DeBaun, Jack R.: *See—*
Pallos, Ferenc M.; DeBaun, Jack R.; and Gutman, Arnold D., 3,968,224.

DeBell, Lawrence R.; and Price, David D., Jr., to Economy Company, The; Price, David D., Jr.; and Price, Ford C., part interest to each. Automatic control circuitry for tape transducing apparatus. 3,968,520, Cl. 360-71.000.

Debourge, Jean-Claude; Gaulliard, Jean-Michel; Thiolliere, Jean Pierre; Abblard, Jean Georges; Lacroix, Guy-Bernard; Pilion, Daniel Jean; Ducret, Jacques Joseph; and Thizy, Andre. Fungicidal compositions. 3,968,208, Cl. 424-209.000.

Debus, Henri Robert: *See—*
Andre, Jacques Maurice Jules Ghislain; Cahen, Raymond Mark; Debus, Henri Robert; Lammers, Rene Odon; and van Thillo, Hugo Johannes, 3,968,225.

Deep Sea Grouting Packers, Inc.: *See—*
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Mott, Roger Eugene; and Barnett, Jerry Gary, 3,967,437.
Mott, Roger Eugene, 3,967,439.
Sickmeier, David August, 3,967,685.
Teal, Richard Donald, 3,967,509.
Whisler, Edwin Lee, 3,967,850.
Whisler, Edwin Lee, 3,967,859.

Dees, Martin, Jr.; and Karcheski, Debra M., to Armstrong Cork Company. Non-woven fabric floor and method for production. 3,968,275, Cl. 427-270.000.

Dees, Martin, Jr.; and Karcheski, Debra M., to Armstrong Cork Company. Non-woven fabric floor. 3,968,290, Cl. 428-196.000.

Deeter, Ronald C.; Lora, Thad A.; and Pozniko, John M., to Salem Tool Company, The. Latching and latch releasing mechanism for auger string couplings. 3,967,909, Cl. 403-322.000.

DeFelice, Stephen L. Method of treating cardiac arrhythmias and of improving myocardial contractility and systolic rhythm with carnitive or a pharmaceutically acceptable salt thereof. 3,968,241, Cl. 424-319.000.

de Haan, Maarten Rutger, to U.S. Philips Corporation. System for recording a color television signal with reduced bandwidth. 3,968,513, Cl. 358-4.000.

DeHart, Harry I. Burglar warning device. 3,968,485, Cl. 340-274.00R.

De Jager, Donald, to Eastman Kodak Company. Three element objective lens. 3,967,884, Cl. 350-226.000.

DeJong, Jan, to Lockheed Petroleum Services Ltd. Method and apparatus for joining a subsea pipeline to an offshore platform riser. 3,967,462, Cl. 61-72.300.

Deletzke, Norman E. H., Jr. Tape winding system. 3,967,789, Cl. 242-56.00R.

Demerjian, Paul D.: *See—*
Coffin, Perley A.; Cook, Philip G.; and Demerjian, Paul D., 3,968,285.

Denis, David R., to Under Sea Industries, Inc. Independent weight system. 3,967,459, Cl. 61-70.000.

Dentalwerk Burmoos Gesellschaft m.b.H.: *See—*
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Derflinger, Raymond E.: *See—*
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Desalination Systems, Inc.: *See—*
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Desormiere, Bernard, to Thomson-CSF. Microwave non-reciprocal junction device. 3,968,457, Cl. 333-1.100.

de Souza, Noel J.: *See—*
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Deutch, Howard E. Ratchet wrench. 3,967,514, Cl. 81-63.000.

Deutsche Bendix Ausrustungs GmbH: *See—*
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Deutsche Edelstahlwerke Gesellschaft mit beschrankter Haftung: *See—*
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Deutsche Texaco Aktiengesellschaft: *See—*
Buschfeld, Adolf; Gramse, Manfred; and Simic, Dragomir, 3,968,308.

De Voss, Edwin A. Apparatus for collecting oil slick from a body of water. 3,968,041, Cl. 210-242.00S.

Dials, Donald, to Lawrence Peska Associates, Inc., a part interest. Clock-radio with automatically selected battery power. 3,968,417, Cl. 320-2.000.

Diamond, Martin J.: *See—*
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Freedman, Bernard; and Diamond, Martin J., 3,968,095.
Freedman, Bernard; and Diamond, Martin J., 3,968,096.

Dickason, Alan F.: *See*—
Cherry, Wesley E.; Dickason, Alan F.; and Hedge, John A., 3,968,054.

Dickens, Elmer Douglas, Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,968,064, Cl. 260-23.0XA.

Dickens, Elmer Douglas, Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,968,081, Cl. 260-45.75N.

Dietert, Harry W., to Harry W. Dietert Co. Sample feed auger structure. 3,967,722, Cl. 198-213.000.

Dietmann, Karl: *See*—
Kampe, Wolfgang; Stach, Kurt; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 3,968,129.

Dilmore, Colonel R.: *See*—
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,968,021.

Dingwall, John Grey; and Randell, Donald Richard, to Ciba-Geigy Corporation. (3-Thioxo-1,2-dithiol-4-yl) substituted triaryl phosphates and thiophosphates. 3,968,123, Cl. 260-327.00C.

Dishun, Thomas R., to Armco Steel Corporation. Slag level detection system. 3,967,501, Cl. 73-304.00C.

Dittmar, Walter: *See*—
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Divekar, Pandurang V.: *See*—
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Diversified Wood Products, Inc.: *See*—
Allen, William R., 3,968,276.

Dixon, Cal L.: *See*—
Morgan, Melvin G.; and Dixon, Cal L., 3,967,734.

Dixon, George Scott; and Flaczynski, Lawrence F., to Reliance Electric Company. Digital tachometer. 3,968,434, Cl. 324-166.000.

Dobarganes, Joseph, to Lawrence Peska Associates, Inc., a part interest. Fixture for testing flatpack modules. 3,968,433, Cl. 324-158.00F.

Doherty, George O. P.; and Fuhr, Kenneth H., to Eli Lilly and Company. 1H-imidazo(4,5-b)pyridine compounds. 3,968,116, Cl. 260-295.0AM.

Dolfi, James J., Sr. Intake vacuum controlled manifold vacuum spoiler. 3,967,605, Cl. 123-119.00B.

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Dorr-Oliver Incorporated: *See*—
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Doucette, Edward I.; Leiterman, Robert W.; and Thompson, Wesley C. Molding composition and articles molded therefrom. 3,968,075, Cl. 260-42.250.

Dow Chemical Company, The: *See*—
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Drabek, Jozef; Beriger, Ernst; and Bohner, Beat, to Ciba-Geigy Corporation. Insecticidal O,S-dialkyl esters of pyridylthio-and-pyridyldithio-phosphoric acids. 3,968,222, Cl. 424-200.000.

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Dresser Industries, Inc.: *See*—
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Drew, Gene R., to United States of America, Navy. Electrically activated pendant release mechanism. 3,967,797, Cl. 244-151.00B.

Driscoll, Frank E.; and Wimbish, Richard S., to Techform, Inc. Cigarette package. 3,967,730, Cl. 206-461.000.

Drydyk, Lawrence A. Guitar chording device for keyboard instruments. 3,967,520, Cl. 84-1.010.

Du Pont of Canada Limited: *See*—
Betty, Robert Warren, 3,968,318.

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DuCharme, Donald W., to Upjohn Company, The. Compositions and methods of use of amidines for anti-arrhythmic purposes. 3,968,211, Cl. 424-248.000.

Ducret, Jacques Joseph: *See*—
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Thiolliere, Jean Pierre; Abblard, Jean Georges; Lacroix, Guy-Bernard; Pillon, Daniel Jean; Ducret, Jacques Joseph; and Thizy, Andre, 3,968,208.

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Dufossez, Marcel Emile, to Societe Technique pour l'Utilisation de la Precontrainte. Tie formed of stressed high-tensile steel tendons. 3,967,421, Cl. 52-146.000.

Dulin, Francis H., to Champion Spark Plug Company. Method for producing a semi-conductor body. 3,968,057, Cl. 252-516.000.

Dumas, David H., to Hercules Incorporated. Water-dispersible thermosettable cationic resins and paper sized therewith. 3,968,317, Cl. 428-537.000.

Dunmire, Paul George, to Johns-Manville Corporation. Pipe saddle assembly. 3,967,839, Cl. 285-199.000.

Dunn, Anthony Kenneth; Spence, David Hugh; and Stockton, Bryan, to Imperial Chemical Industries Limited. Isolation process for water-soluble dyes. 3,968,098, Cl. 260-208.000.

Dunn, George L.; and Hoover, John R. E., to SmithKline Corporation. 3-Heterocyclic thiomethylcephalosporins as antibacterial agents. 3,968,226, Cl. 424-246.000.

Dunn, John A.; and Frank, Leonard, to United States of America, Army. Method of producing a cavity in the bursting charge of a high explosive projectile. 3,967,527, Cl. 86-20.00B.

Dunnam, Curtis R., to NCR Corporation. Rate compensating monostable multivibrator. 3,968,449, Cl. 328-207.000.

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E. Baker and Associates, Inc.: *See*—
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Eckert, Konrad, to Robert Bosch G.m.b.H. Fuel injection system. 3,967,607, Cl. 123-139.0AW.

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Ecsedy, Robert N., to Fairfield Chemical Services. Use of para-tert. butyl phenol disulfide for vulcanizing chlorobutyl rubber compositions. 3,968,062, Cl. 260-5.000.

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Edwards, Gerald L., to CX Corporation. Camera filmstrip processor controlled by film marks. 3,967,518, Cl. 83-210.000.

Edwards, Hans Alexander. Apparatus and method for manufacturing leather beading line and the novel product made thereby. 3,967,474, Cl. 69-21.000.

Edwards, Thomas C., to Rovac Corporation, The. Air conditioning system having super-saturation for reduced driving requirement. 3,967,466, Cl. 62-402.000.

Egnaczak, Raymond K., to Xerox Corporation. Coating apparatus and uses thereof. 3,968,271, Cl. 427-15.000.

Egner, Ronald J., to Textron, Inc. Clinch type fastener. 3,967,669, Cl. 151-41.730.

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Ehni, George John, III, to Texas Instruments Incorporated. Solid state television channel selection system. 3,968,440, Cl. 325-417.000.

Eickmann, Karl. Rotor, pistons, piston shoes and associated means in fluid handling devices. 3,967,540, Cl. 91-488.000.

Eiselt, Gunter; and Hossbach, Rudolf, to Eiselt, Gunter. Upholstering body having a supported core in the form of a yieldable plate of synthetic material and a resilient layer on the core. 3,967,852, Cl. 297-452.000.

Eiwa Denki Co., Ltd.: *See*—
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Ekstrom, Ake, to Allmanna Svenska Elektriska Aktiebolaget. Direct current transmission and method of operating the same. 3,968,419, Cl. 321-27.00R.

Ekstrom, Philip A., to Board of Regents, University of Washington. Measuring repetition rate. 3,968,431, Cl. 324-78.00E.

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Emling, Leo B. Soil shattering and aerating device. 3,967,564, Cl. 111-7.000.

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Emms, Desmond John, to Lucas Electrical Company Limited, The. Roller clutch drive component. 3,967,507, Cl. 74-6.000.

Enami, Toyoichiro; Kurasawa, Kazuo; Ii, Masaktaka; and Hashimoto, Masaru, to Nissan Motor Co., Ltd. Photodensitometer for measuring optical fringe patterns. 3,967,903, Cl. 356-167.000.

Eng, Jeffrey D.; Harke, Cyril J.; Bosa, Primo; and Figueras, Wilfredo E., to Hooker Chemicals & Plastics Corporation. Electrolytic cell seal. 3,968,022, Cl. 204-279.000.

Engel, Horst, to Continental Gummi-Werke Aktiengesellschaft. Pressure pad of rubber or rubber-like materials for presses. 3,968,282, Cl. 428-156.000.

Engineering Technology Analysts, Inc.: *See—*
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Enomoto, Minoru: *See—*
Tamesui, Tsuyoshi; Nakata, Shuichi; and Enomoto, Minoru, 3,967,414.

Ensinozo, Juan Saavedra. Equine hoofwear. 3,967,683, Cl. 168-4.000.

Epic Metals Corporation: *See—*
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Eppler, Richard A., to SCM Corporation. Translucent ceramic whiteware products. 3,967,971, Cl. 106-45.000.

Erickson, Ronald E., to Sybron Corporation. Filter molded heating and/or insulating member. 3,968,281, Cl. 428-75.000.

Erickson, Wayne K., to Phillips Petroleum Company. Finishing agent and nonscroopy polyolefin fibers. 3,968,042, Cl. 252-8.900.

Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company, B.V. Clutch shifter. 3,967,710, Cl. 192-98.000.

Ernst, Richard R., to Varian Associates. Fourier transform NMR spectroscopy employing a phase modulated rf carrier. 3,968,424, Cl. 324-.5AC.

Eschbaugh, John T.; and Lindahl, Herbert S., to Gulf & Western Metals Forming Company. Refrigeration expansion valve. 3,967,782, Cl. 236-92.00B.

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Esterly, Harry F. Multi directional web cutter. 3,967,519, Cl. 83-455.000.

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Farrell, Joseph Paul, to Radiation Dynamics, Inc. Beam splitting to improve target life in neutron generators. 3,968,377, Cl. 250-499.000.

Faul, Wolfgang: *See—*
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Fegley, Charles Robert. Anti-burglary irritant spraying device. 3,967,757, Cl. 222-5.000.

Feichtinger, Heinrich, to Leybold-Heraeus-Verwaltung G.m.b.H. Method and means for drawing samples from melts. 3,967,505, Cl. 73-425.600.

Ferguson, Fred E.; and Bell, Robert J., to O. M. Scott & Sons Company. Fungicidal compositions containing a phthalonitrile. 3,968,239, Cl. 424-304.000.

Fernandez, Vicente Arregui: *See—*
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Fernicola, Robert Charles, to Union Carbide Corporation. MIG starting system. 3,968,340, Cl. 219-131.00F.

Ferrara, Achille K., to Ultramatic Equipment Company. Vibratory finishing systems. 3,967,413, Cl. 51-163.100.

Ferrara, Angelo, to Acrison, Inc. Automatically controlled weigh feeding apparatus. 3,967,758, Cl. 222-58.000.

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Finkenauer, Hans-Jakob: *See—*
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Firstenberg, Morris; Chestnut, Daniel; and Marshall, Edward. Clothboard reel. 3,967,800, Cl. 242-222.000.

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Flament, Ivon A., to Firmenich S.A. Organoleptic cyclopentapyrazines as flavoring agents. 3,968,212, Cl. 424-250.000.

Fleischer, Henry. Baby holding device. 3,967,833, Cl. 280-639.000.

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Fogelstrom, Gosta. Device for guiding a drill tool. 3,967,686, Cl. 173-22.000.

Fohl, Artur. Device for initiating the blocking of a reel shaft for a safety belt winding-up automat. 3,967,794, Cl. 242-107.40R.

Foley, Donald E. Clean up/cut spoon. 3,967,376, Cl. 30-150.000.

Folgero, Kare M.; Fredriksson, Bengt; Norberg, Lars-Gunnar; and Oberg, Karl-Erik, to Uddeholms Aktiebolag. Method for treating a metal melt. 3,967,955, Cl. 75-12.000.

Fonseca, Anthony G.; and Every, Richard L., to Continental Oil Company. Method of transporting a sulfur-hydrocarbon slurry in a pipeline. 3,967,860, Cl. 302-66.000.

Fonseca, Anthony G., to Continental Oil Company. Aqueous ammonia oxidative leach and recovery of metal values. 3,967,957, Cl. 75-103.000.

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Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., to Gulf Research & Development Company. Hydrodesulfurization process with parallel first stages in series with a unified second stage. 3,968,026, Cl. 208-210.000.

Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., to Gulf Research & Development Company. Multi-stage hydrodesulfurization utilizing a second stage catalyst promoted with a group IV-B metal. 3,968,027, Cl. 208-210.000.

Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., to Gulf Research & Development Company. Process for onstream regeneration of a hydrodesulfurization catalyst. 3,968,028, Cl. 208-210.000.

Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., to Gulf Research & Development Company. Desulfurization process employing multi-catalyst reactor. 3,968,029, Cl. 208-216.000.

Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., to Gulf Research & Development Company. Multi-stage hydrodesulfurization process utilizing multi-cycle second stage promoted catalyst. 3,968,031, Cl. 208-210.000.

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Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable plastics containing haloolefins. 3,968,094, Cl. 526-914.000.

Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable plastics containing an N-halo amide. 3,968,095, Cl. 526-914.000.

Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable polyolefins containing an halogenated nitrile. 3,968,096, Cl. 526-914.000.

Frehn, Fritz, to Deutsche Edelstahlwerke Gesellschaft mit beschrankter Haftung. Corrosion and wear resistant steel sinter alloy. 3,967,935, Cl. 29-182.700.

Frese, Stefan; and Mayerhofer, Franz, to Siemens Aktiengesellschaft. Firing apparatus for a plurality of electric valves. 3,968,397, Cl. 315-155.000.

Freter, Walter, to Siemens Aktiengesellschaft. Analyzer device for a VOR navigational receiver. 3,968,494, Cl. 343-106.00R.

Frey, Gerhard: *See—*
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Friedrich, Hans, to Siemens Aktiengesellschaft. Process for the production of a two-phase charge shift assembly. 3,967,365, Cl. 29-579.000.

Frohlich, Karl Heinrich. Butterfly flap valve. 3,967,813, Cl. 251-298.000.

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Gallo, Duane G.; and Comer, William T., to Mead Johnson & Company. Sulfonamidoaminopropiophenone interceptive process. 3,968,242, Cl. 424-321.000.

Gallo, Joseph Sebato. Moisture gauge for a hanging potted plant. 3,967,578, Cl. 116-114.00R.

Gamell, Joseph A., to Joseph Gamell Industries, Incorporated. Power generating system. 3,967,914, Cl. 415-90.000.

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Garskamp, Arnoldus, to U.S. Philips Corporation. Receiver tuning circuit with automatic search and AFC using common capacitor. 3,968,441, Cl. 325-420.000.

Garskamp, Arnoldus, to U.S. Philips Corporation. Receiver tuning circuit. 3,968,442, Cl. 325-422.000.

Garzia, Aldo, to Istituto Chemioterapico Italiano. α-Amino-γ-butyrolactones as sedatives. 3,968,233, Cl. 424-279.000.

Gates, John I. Boat window. 3,967,424, Cl. 52-208.000.

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Gavin, Linus A. Vacuum and combination vacuum/blow means. 3,967,341, Cl. 15-345.000.

Gawlick, Heinz; and Brede, Uwe, to Dynamit Nobel Aktiengesellschaft. Piezoelectric fuze, especially for projectiles. 3,967,555, Cl. 102-70.2GA.

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Getsch, Edward W.; and Puerner, Gale N., to Pako Corporation. Continuous multi-layered packaging assembly. 3,967,776, Cl. 229-69.000.
Ghelardoni, Mario; Pestellini, Vittorio; Volterra, Giovanna; and Pisanti, Nicola, to A. Menarini S.A.S. Methyl 2(1 chloronaphth-2-yloxy)propionate. 3,968,145, Cl. 260-473.00F.
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Goser, Karl, to Siemens Aktiengesellschaft. Complementary storage element. 3,968,479, Cl. 340-173.0FF.
Gostin, Judson J., to General Electric Company. Radar MTI processor with CFAR. 3,968,490, Cl. 343-7.700.
Goto, Kenji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Stratified-combustion type internal combustion engine with pre-combustion-chamber. 3,967,611, Cl. 123-191.00S.
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Governale, Bernard C., to Peachtree Doors, Inc. Reinforced striker assembly for door locks. 3,967,845, Cl. 292-340.000.
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Buschfeld, Adolf; Gramse, Manfred; and Simic, Dragomir, 3,968,308.
Grandori, Carlo, to Robbins Company, The. Continuous tunnel boring machine and method. 3,967,463, Cl. 61-85.000.
Graube, Andrejs, to Hughes Aircraft Company. Bleached holographic material and process for the fabrication thereof using halogens. 3,967,963, Cl. 96-27.00H.
Gravesteyn, Elbert, to Heinekon Technisch Beheer B.V. Capsulating machine. 3,967,436, Cl. 53-315.000.
Gray, Allan Poe, to IIT Research Institute. Prolonged release of antifertility drugs. 3,968,105, Cl. 260-239.500.
Green, Michael J.; and Shue, Ho-Jane, to Schering Corporation. (17R-)-Spiro-[androstane-17,1'-cyclobutan]-2'-ones, methods for their manufacture and intermediates useful therein. 3,968,132, Cl. 260-397.300.
Greendale, Allen E., to United States of America, Navy. Method and apparatus for direct radon measurement. 3,968,371, Cl. 250-380.000.
Gregg, James S.; Scott, Charles J.; Suiter, Donna A.; Sullivan, James P.; Woodburn, Joseph A.; and Workman, David E., to Samsonite Corporation. Luggage case. 3,967,708, Cl. 190-41.00B.
Gregg, Ray V., III, to Sundstrand Data Control, Inc. Television signal distribution system. 3,968,327, Cl. 178-6.800.
Gregorio, Guglielmo; and Montrasi, Giorgio, to Montedison S.p.A. Process for recovering catalyst systems from raw hydroformylation products. 3,968,134, Cl. 260-429.00R.
Gregory, Roy, to Urocare Products, Inc. Check valve for urine collection device. 3,967,645, Cl. 137-525.100.
Griesing, John E.; and Weissmann, Dan, to Monsanto Company. Trimming blow molded plastics articles. 3,967,516, Cl. 82-47.000.
Griffin, Harry Charles; Holden, Thomas Edwin; and Upton, Orland Edgar, to Hewlett-Packard Company. Method of manufacturing a multicontact switch. 3,967,370, Cl. 29-622.000.
Griffith Laboratories, Inc., The: *See—*
Sair, Louis; and Quass, Donald W., 3,968,268.
Grimaud, Edouard; and Tournut, Claude, to Produits Chimiques Ugine Kuhlmann. Positively charged aqueous dispersions of polytetrafluoroethylene and method for preparing the same. 3,968,069, Cl. 260-29.60F.

Grinev, Alexei Nikolaevich; Stolyarchuk, Alexandr Alexandrovich; Galenko-Yaroshevsky, Pavel Alexandrovich; Tantsjura, Vladimir Spiridonovich; and Arkhangelskaya, Natalya Vitalievna. Local anaesthetic. 3,968,237, Cl. 424-285.000.

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Gruber, Wilhelm Franz, to Du Pont de Nemours, E. I., and Company. Use of aromatic furfuryl polycarbamates as chloroprene polymer vulcanization accelerators. 3,968,092, Cl. 526-17.000.

Grundy, Philip J.; and Lin, Yeong S., to International Business Machines (IBM). Method of, and apparatus for, establishing self-biased single wall domains. 3,968,481, Cl. 340-174.0TF.

GTE Automatic Electric Laboratories Incorporated: *See—*
Tracey, Robert J.; and Violet, Ronald J., 3,968,384.

Guenther, Manfred H. Crankcase oil drainage and collection device. 3,967,697, Cl. 184-1.500.

Guerin, Jean, to Produits Chimiques Ugine Kuhlmann. Process for prepared perchloromethyl mercaptan by chlorination of carbon disulfide. 3,968,155, Cl. 260-543.00H.

Guhl, Richard E.: *See—*
Cole, Carroll R.; Guhl, Richard E.; and Logemann, Larry R., 3,967,709.

Guinn, Stanley G. Door latching apparatus actuated by cleansing agent sensor. 3,967,478, Cl. 70-144.000.

Gulf Research & Development Company: *See—*
Frayer, James A.; Hildebrand, Richard E.; and Paraskos, John A., 3,968,026.
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Eschbaugh, John T.; and Lindahl, Herbert S., 3,967,782.

Gundlach, Robert W., to Xerox Corporation. Duplicating system. 3,967,818, Cl. 270-18.000.

Gunthner, Franz, to Jenaer Glaswerk Schott & Gen. Method of making a hollow glass article. 3,967,947, Cl. 65-70.000.

Guran, Zenon, to Xerox Corporation. Fuser roll temperature regulator probe. 3,968,343, Cl. 219-216.000.

Gusakov, Vyacheslav Nikolaevich: *See—*
Shavyrin, Vladimir Sergeevich; Gusakov, Vyacheslav Nikolaevich; Pankova, Klavdia Vasilievna; Polyakova, Nina Petrovna; Shirkaeva, Natalya Petrovna; Gorin, Valentin Nikolaevich; Goyovin, Oleg Semenovich; Mastjukova, Alexei Egorovich, deceased; and Mastjukova, Maria Pavlovna, heir at law, 3,968,043.

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Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Guskov, Konstantin Nikolaevich, 3,967,996.

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Haas, Ernst: *See—*
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Haas, Gerhard Julius; and Lugay, Joaquin Castro, to General Foods Corporation. Method of preparing animal food of increased palatability. 3,968,255, Cl. 426-33.000.

Haberli, Roland; and Mollet, Hans, to Ciba-Geigy Corporation. Solid, non-dusty dyestuff-foams of any desired shape and size. 3,967,921, Cl. 8-93.000.

Habert, Roger Jean. Speed sensitive switching device. 3,967,603, Cl. 123-118.000.

Hafla, Dietmar; and Abele, Kurt, to Index-Werke KG Hahn & Tessky. Apparatus for effecting and controlling the indexing of tool turrets in machine tools. 3,968,415, Cl. 318-569.000.

Hagerty, Philip J.: *See—*
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Haggerty, William N., to Owens-Corning Fiberglas Corporation. Glass sizing. 3,968,068, Cl. 260-29.6RB.

Hajek, Frantisek; Studnicka, Miroslav; and Kavalir, Jaroslav, to Tesla. Apparatus for testing the operability of emergency vehicular radio transmitters. 3,968,436, Cl. 325-67.000.

Halbasch, Gerald K. Fishing floater. 3,967,407, Cl. 43-44.900.

Halcon International, Inc.: *See—*
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Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Slide actuator and means controlling movement of same between fully retracted and fully advanced positions. 3,967,713, Cl. 194-92.000.

Hall, Richard W.; Schutte, Daniel A.; and Sonnenberg, Sven, to Kelsey-Hayes Company. Hydraulic intensifier. 3,967,542, Cl. 92-85.00B.

Hallanger, Lawrence W.; and Tucker, Leroy W., to United States of America, Navy. Gas vent system for operation in any arbitrary spatial orientation. 3,967,633, Cl. 137-43.000.

Halliburton Company: *See—*
Kendrick, William D.; and Frazier, Bruce J., 3,967,841.
Kendrick, William D., 3,967,842.

Halsted, Milton; and Uyeda, Tim M., to Chicago Specialty Manufacturing Company. Shower spray apparatus. 3,967,783, Cl. 239-102.000.

Halverson, Frederick: *See—*
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Hamada, Hideo: *See—*
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Hamill, Robert L.; and Stark, William Max, to Eli Lilly and Company. Antibiotic A-2315. 3,968,204, Cl. 424-121.000.

Hamilton, Eric, to Lawrence Peska Associates, Inc., a part interest. Illuminated earring which is switched on by securement to the ear. 3,968,357, Cl. 240-6.40W.

Hammann, Ingeborg: *See—*
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,968,232.

Hammond, Robert T. Skylight system. 3,967,423, Cl. 52-200.000.

Hanazono, Masanobu; Asai, Osamu; Fuyama, Moriaki; Iimura, Masao; Yagi, Hideyuki; and Okamura, Masahiro, to Hitachi, Ltd. Method of manufacturing low power loss semiconductor device. 3,968,019, Cl. 204-192.000.

Hancart, Michel Aime: *See—*
Mouille, Rene Louis; Coffy, Rene Louis; Hancart, Michel Aime; and Mao, Daniel, 3,967,918.

Hancock, Byford P.: *See—*
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Hanson, Richard Eric; and Fordyce, William Fulmer, to RCA Corporation. Measuring ignition timing using starter current. 3,968,425, Cl. 324-16.00T.

Hara, Junji; Togami, Shigenori; and Tsuruta, Masami, to Mitsui Toatsu Chemicals, Incorporated. Process for producing fiber-glass reinforced plastics. 3,968,073, Cl. 260-42.180.

Harbert, Charles A.: *See—*
Welch, Willard H., Jr.; and Harbert, Charles A., 3,968,231.

Hardt, Dietrich; Alberts, Heinrich; and Bartl, Herbert, to Bayer Aktiengesellschaft. Impact-resistant polyvinyl chloride grafted ethylene-vinyl esters. 3,968,184, Cl. 260-876.00R.

Harke, Cyril J.: *See—*
Eng, Jeffrey D.; Harke, Cyril J.; Bosa, Primo; and Figueras, Wilfredo E., 3,968,022.

Harnisch, Horst, to Bayer Aktiengesellschaft. Vic-triazole compounds. 3,968,119, Cl. 260-308.00A.

Harper, James T. Ambulatory rocking device. 3,967,820, Cl. 272-70.000.

Harralson, Joseph H.; and Wurzbach, William F., to Brunswick Corporation. Exhaust relief silencing apparatus for marine propulsion systems. 3,967,446, Cl. 60-312.000.

Harrington, Richard P.; and Harrington, Russell J. Multiple dial combination lock. 3,967,477, Cl. 70-131.000.

Harrington, Russell J.: *See—*
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Harris, David Andrew; and Hart, Bruce Edward, to Johns-Manville Corporation. Textural panel. 3,968,274, Cl. 427-203.000.

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Harris, Robert C., to Bendix Corporation, The. Electrical discharge device comprising an insulator body having an electrically semiconducting coating formed thereon. 3,968,303, Cl. 428-332.000.

Harrison, Jonas P., to Chevron Research Company. Hydrocarbon oxidation process. 3,968,127, Cl. 260-346.80A.

Harry W. Dietert Co.: *See—*
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Hart, Bruce Edward: *See—*
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Hart, Frank M. Window lock. 3,967,843, Cl. 292-273.000.

Hart, Joseph M. Tie attachment for coat hanger. 3,967,766, Cl. 223-85.000.

Hasegawa, Akira; and Ozoe, Hiromichi, to Nippon Kokan Kabushiki Kaisha. Self-running and automatic cleaning coating machine for internal wall of pipe. 3,967,584, Cl. 118-72.000.

Hasegawa, Masao; Furuno, Akihisa; Ishikawa, Haruhiko; and Ogawa, Yasuo, to Nitto Chemical Industry Co., Ltd. Process for producing partially hydrolyzed polyacrylamide in the presence of alkali metal hydroxide and boric acid. 3,968,093, Cl. 526-303.000.

Hasegawa, Takashi. Process for preparation of metal coatings. 3,968,270, Cl. 427-13.000.

Hashimoto, Masaru: *See—*
Enami, Toyoichiro; Kurasawa, Kazuo; Ii, Masaktaka; and Hashimoto, Masaru, 3,967,903.

Hasselbeck, Richard J.; and Stiver, Clarence E., to Stolle Corporation, The. Neckerflanger for metal cans. 3,967,488, Cl. 72-355.000.

Hata, Hiroyoshi: *See—*
Honda, Seiichirou; Hata, Hiroyoshi; Simura, Yosimasa; and Une, Soichi, 3,967,978.

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Haverdink, Virgil Dean, to Deere & Company. Wingfold positioning device. 3,967,684, Cl. 172-311.000.
Hawthorne, Marion F., to Rohm and Haas Company. High energy propellant compositions including vinyl decaborane-polyester copolymer binder. 3,967,989, Cl. 149-19.200.
Hayashi, Ikuya; Yamane, Yukio; Hitomi, Chiyozi; and Miyake, Keiske, to Toyo Boseki Kabushiki Kaisha. Film excellent in slip characteristics and its production. 3,968,183, Cl. 260-860.000.
Hayashi, Yoshinobu: *See*—
Ogasa, Katsuhiro; Okonogi, Shigeo; Yuguchi, Hiroya; Hayashi, Yoshinobu; and Miyazaki, Yusuke, 3,968,267.
Hayes, William L.; and Siciliano, Jerry A., to Altec Corporation. Method for aligning loudspeaker diaphragm and voice coil assembly. 3,967,367, Cl. 29-594.000.
Hays, Herbert G.; and Maxwell, Richard D., to Amana Refrigeration, Inc. Heat exchange control system. 3,967,590, Cl. 122-4.00R.
Hayward, Fredrick R.: *See*—
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Hazard, Robert E., to Polytop Corporation. Child-resistant closures with limited spout accessibility. 3,967,764, Cl. 222-536.000.
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Heaton, Joe. Apertured diaphragm end valve. 3,968,339, Cl. 200-86.00A.
Heberle, Hansjorg, to Motoren- und Turbinen-union Friedrichshafen GmbH. Valve control. 3,967,601, Cl. 123-90.400.
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Cherry, Wesley E.; Dickason, Alan F.; and Hedge, John A., 3,968,054.
Hedges, Wendell L. Calf extractor. 3,967,626, Cl. 128-352.000.
Hegel, Robert W., to Monroe Auto Equipment Company. Hydraulic master-slave clutch system. 3,967,447, Cl. 60-572.000.
Hegenbart, Horst, to Gebr. Hofmann KG. Multi-column lifting apparatus and synchronization control device for same. 3,967,701, Cl. 187-29.00R.
Heidrich, Paul F.; and Powell, Carl G., to International Business Machines (IBM). Coupler for coupling optical energy transmitted by optical fiber to optical waveguide and method of manufacture. 3,967,877, Cl. 350-96.00C.
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Heinold, Lloyd K.; and Livesay, Richard E., to Caterpillar Tractor Co. Retaining means for ground-engaging tool. 3,967,399, Cl. 37-142.00A.
Heinzl, Joachim, to Siemens Aktiengesellschaft. Arrangement for actuating dot-producing printing elements of a mosaic printing head. 3,968,386, Cl. 310-8.100.
Hekal, Ihab M.; and Chelton, Raymond G., to Continental Can Company, Inc. Metal coated with compositions prepared from aqueous dispersions of carboxylic acid resin and an aliphatic amine. 3,968,311, Cl. 428-461.000.
Heller, John P.: *See*—
Stein, Nathan; and Heller, John P., 3,967,682.
Helsley, Grover C., to A. H. Robins Company, Incorporated. 5-(3-)substituted-10,11-dihydro-5H-dibenz[b,f]azepines. 3,968,217, Cl. 424-267.000.
Helwig, Lawrence E.; and Neish, Richard A., to United States Steel Corporation. Method for treating coated ferrous substrates. 3,967,984, Cl. 148-6.160.
Henkel & Cie G.m.b.H.: *See*—
Sommerfeld, Dieter; Kowald, Bernhard; and Winkels, Monika, 3,967,999.
Henninger, Heinz Willi; Riethmuller, Lothar; Kiefer, Hans Walter; and Spreitzhofer, Ernst Gunther Robert, to Bodenseewerk Perkin-Elmer & Co. GmbH. Signal gating device. 3,967,900, Cl. 356-88.000.
Henry, Jack P.; and Myers, James D., to M & M Livestock Products Co., Inc. Silage preservative. 3,968,259, Cl. 426-63.000.
Henze, Walter J.; and Thein, San, to Penn Fishing Tackle Mfg. Co. Trolling apparatus. 3,967,405, Cl. 43-27.400.
Hepperle, Phillip, to Karl Mayer Textilmaschinenfabrik GmbH. Warp knitting machine with improved thread feeding apparatus. 3,967,469, Cl. 66-84.00A.
Herber, John F.; Sears, James K.; and Thompson, Quentin E., to Monsanto Company. Dye solvents for pressure-sensitive record material. 3,968,320, Cl. 428-537.000.
Hercules Incorporated: *See*—
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Hergenrother, Rudolf Clemens. Instrument landing system. 3,968,495, Cl. 343-108.00R.
Herring, William M.; and Walling, Dennis B., to Standard Oil Company. Multiplexer-analog/digital conversion system. 3,968,487, Cl. 340-347.0AD.
Herrmann, Gunther; and Pill, Adam, to Pill, Adam. Arrangement for the fluid treatment, especially etching, of objects in assembly-line-like fashion. 3,967,632, Cl. 134-83.000.
Hess, Ernst P., to Qume Corporation. Cartridge drive apparatus. 3,967,790, Cl. 242-67.200.
Hessel, Frank J.: *See*—
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Higbee, David E., to Phillips Petroleum Company. Poly(arylene sulfide) coating compositions containing polyoxyethylated vegetable oil. 3,968,289, Cl. 428-195.000.
Higuchi, Takeru, to Alza Corporation. Sympathomimetic topical and percutaneous administration with halogenated promoters. 3,968,245, Cl. 424-330.000.
Hild, Theodor: *See*—
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Hill, Raymond G. Horticulture spraying systems. 3,967,920, Cl. 417-63.000.
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Bedard, Joseph A.; and Hills, Roger G., 3,967,641.
Himmelmann, Wolfgang; Balle, Gerhard; Nittel, Fritz; and Saleck, Wilhelm, to AGFA-Gevaert, A.G. Photographic gelatine layers with improved physical and photographic properties. 3,967,966, Cl. 96-114.000.
Hinata, Masanao; Takei, Haruo; Sato, Akira; and Iwamoto, Atsuo, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,967,967, Cl. 96-124.000.
Hioki, Kei: *See*—
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Hirano, Itsuro; Uchiyama, Mitsuru; and Satoh, Masao, to BF Kogyo Kaisha, Ltd. Apparatus for cooling and dehumidication of compressed air. 3,967,940, Cl. 55-122.000.
Hirasawa, Shigemi: *See*—
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Hirayama, Tetsuro; Yuyama, Kousuke; and Matsuura, Yoshihiko, to Juki Co., Ltd. Cloth feeding device for sewing machine and method thereof. 3,967,565, Cl. 112-208.000.
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Ho, Robert S.; Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz, Inc. Substituted or unsubstituted p-alkanoyl toluenes as anti-diabetic agents. 3,968,247, Cl. 424-331.000.

Hobbs, James W., to Phillips Petroleum Company. Absorption process method and apparatus. 3,967,937, Cl. 55-18.000.

Hobday, Cyril; and Price, Ian Michael, to Ciba-Geigy Corporation. Composition for use in the dyeing of polyester fibers. 3,967,924, Cl. 8-169.000.

Hochreuter, Richard, to Sandoz Ltd. Quaternary ammonium antistatic agents. 3,968,315, Cl. 428-474.000.

Hodogaya Chemical Co., Ltd.: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Yamaguchi, Masahiko; Watanabe, Akio; and Saeki, Keiso, 3,967,835.

Hodska, Nicholas S., to Lawrence Peska Associates, Inc., a part interest. Toy doll. 3,967,410, Cl. 46-116.000.

Hodska, Nicholas S., to Lawrence Peska Associates, Inc., a part interest. Combined confection and bubble-forming device. 3,968,262, Cl. 426-134.000.

Hoechst Aktiengesellschaft: *See—*
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Hoff, Dale R.; Kulsa, Peter; Mrozik, Helmut H.; and Rogers, Edward F., to Merck & Co., Inc. 4-Nitro-5-cyanoimidazoles as coccidiostats. 3,968,228, Cl. 424-273.000.

Hoffman, Elmer H. Snowmobile suspension system. 3,967,692, Cl. 180-5.00R.

Hoffman, Robert, to Lawrence Peska Associates, Inc., a part interest. Curtain rod support assembly. 3,967,805, Cl. 248-262.000.

Hoffman, Sargent Glenn, III; and Mather, Frank Watkins, III, to Dow Chemical Company, The. Method of repairing leaky hollow fiber permeability separatory devices. 3,968,192, Cl. 264-36.000.

Hoffmann, Lawrence C., Jr.: *See—*
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Hoffmeister, Bernhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for moving fuel elements and control bars from one place to another place in a core reactor. 3,967,741, Cl. 214-27.000.

Hoffschmidt, Edward J. Razor construction. 3,967,375, Cl. 30-47.000.

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Holm, Melvin M., to Chevron Research Company. Hydrocarbon conversion process. 3,968,025, Cl. 208-135.000.

Holt, Harley Raymond, to Bunker Ramo Corporation. Insertion tool operable in accordance with a predetermined program to insert a plurality of conductors in insulation-piercing contacts disposed on opposite sides of an electrical connector. 3,967,356, Cl. 29-203.0MW.

Holub, Josef: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honda, Seiichirou; Hata, Hiroyoshi; Simura, Yosimasa; and Une, Soichi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Resin sheet having porous layered structure useful as electrode separator for electric cells. 3,967,978, Cl. 136-146.000.

Honda, Toshio; Tanaka, Shoji; Fukuura, Yukio; Suzuki, Yoshikatsu; Tanuma, Itsuo; Iwami, Koichi; and Shibata, Shoson, to Bridgestone Tire Company Limited. Method for improving the adhering ability of vulcanized rubber surfaces. 3,968,198, Cl. 264-343.000.

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Hoshino, Yasutaka; Utsumi, Yoshiharu; Aoki, Nobuhiko; and Yokokawa, Hiroshi, to Hitachi, Ltd. Nuclear magnetic resonance apparatus of fourier transform type. 3,968,423, Cl. 324-.5AC.

Hosoe, Kazuya: *See—*
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Hsieh, Wan Hsing Hsien. Self-sharpening pencil. 3,967,905, Cl. 401-51.000.

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Hunter, Gordon E.; Rau, James E.; and Van Wyk, Rogell, to Rockwell International Corporation. Anti-skid control system employing integral-plus-proportional control of pulsed modulation. 3,967,862, Cl. 303-21.00P.

Hunter, Mark A., to Xerox Corporation. Control logic system for article-labeling apparatus. 3,968,349, Cl. 235-61.60R.

Hunwick, Richard James, to Dorr-Oliver Incorporated. Centrifugal separator. 3,967,778, Cl. 233-7.000.

Huston, Norman E., to United States of America, Energy Research and Development Administration. Neutronic reactor construction. 3,968,007, Cl. 176-41.000.

Hwa, Jesse C. H.; and Jin, Jung Il, to Stauffer Chemical Company. Method of stabilizing polythiol reaction products. 3,968,077, Cl. 260-45.80A.

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Illemann, Heinrich; and Urbanek, Josef, to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft. Clamping device for screen bottoms. 3,968,033, Cl. 209-403.000.
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Izzi, Lewis B., Sr. Offset plastic flange for connecting toilet bowls to drain pipes. 3,967,836, Cl. 285-12.000.
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Jasch, Erich, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Hoisting apparatus, particularly for a cooling tower. 3,967,699, Cl. 187-2.000.
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Johnson, Odean J. Automobile wheel cover. 3,967,855, Cl. 301-37.00R.

Johnson, Wendell C., to Xerox Corporation. Keyboard switch assembly having movable contact, and supporting helicline type legs disposed co-planar to common conductive sheet. 3,968,336, Cl. 200-5.00A.

Jolley, Leonard. Burglar and fire alarm system. 3,968,483, Cl. 340-274.00R.

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Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., to Texas Instruments Incorporated. High gain relays and systems. 3,968,380, Cl. 307-99.000.

Judice, Clay. Golf putter. 3,967,826, Cl. 273-167.00F.

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Jurak, Ivan. Sanding devices. 3,967,417, Cl. 51-170.0TL.

Jurd, Leonard, to United States of America, Agriculture. Cinnamylsesamol derivatives as insect chemosterilants. 3,968,234, Cl. 424-282.000.

Juvet, Richard S., Jr.; and Mowery, Richard A., Jr., to Research Corporation. Flame aerosol detector for liquid chromatography. 3,967,931, Cl. 23-230.0PC.

Jyo, Yoshio; Wada, Yoshio; Aonuma, Mitsuyoshi; Kobayashi, Takeo; and Inokuchi, Kyouzi, to Nippon Zeon Co., Ltd. Process for the surface treatment of unsaturated rubber. 3,968,316, Cl. 428-492.000.

Kabushiki Kaisha Meidensha: *See—*
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Kain, Per; and Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Convertor connection with asymmetry indicating means. 3,968,418, Cl. 321-12.000.

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Kamimura, Kazuhiko; and Yoshida, Tadao, to Sony Corporation. Transistor amplifier. 3,968,451, Cl. 330-22.000.

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Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Guskov, Konstantin Nikolaevich. Method of manufacture of hollow pieces. 3,967,996, Cl. 156-156.000.

Kampe, Wolfgang; Stach, Kurt; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, to Boehringer Mannheim G.m.b.H. Azidophenol amine compounds and therapeutic compositions. 3,968,129, Cl. 260-349.000.

Kane, William Paul, to Du Pont de Nemours, E. I., and Company. Polyethylene terephthalate/paperboard laminate and method of making it, container blank formed from such laminate and container formed from such blank, and cooking method using such container. 3,967,998, Cl. 156-226.000.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, 3,968,307.

Kaneko, Hirokazu; and Nakano, Hiroo, to Ricoh Co., Ltd. Shutter for photographic cameras with a flash equipment. 3,968,503, Cl. 354-33.000.

Kaneko, Takashi: *See—*
Iwaska, Tatsuo; Yuminaka, Takeo; Kaneko, Takashi; and Kinoshita, Hiroshi, 3,967,702.

Kaneko, Yoshio: *See—*
Inoue, Sakae; Nishi, Toshio; Shibata, Shoson; Matsunaga, Tsutomu; and Kaneko, Yoshio, 3,968,182.

Kano, Saburo; Nomura, Osami; Hirono, Yoshihiko; Ishikawa, Hisao; and Yamada, Shozo, to Nippon Soda Company Limited. Combating weeds in rice with benzothiazole derivatives. 3,967,950, Cl. 71-90.000.

Kano, Saburo: *See—*
Hirono, Yoshihiko; Ishikawa, Hisao; Yamada, Shozo; Kano, Saburo; and Nomura, Osami, 3,967,951.

Kaplan, Gerald Stanley, to RCA Corporation. Adaptive parameter processor for continuous wave radar ranging systems. 3,968,492, Cl. 343-14.000.

Karcheski, Debra M.: *See—*
Dees, Martin, Jr.; and Karcheski, Debra M., 3,968,275.
Dees, Martin, Jr.; and Karcheski, Debra M., 3,968,290.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Hepperle, Phillip, 3,967,469.

Kastening, Bertel; and Faul, Wolfgang, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of making electrode for preparing hydrogen peroxide. 3,968,273, Cl. 427-122.000.

Kastinger, Hermann. Skiing boot. 3,967,391, Cl. 36-50.000.

Kato, Michio: *See—*
Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio; Takao, Hiroshi; and Ayano, Masami, 3,968,153.

Katsuda, Yoshio, to Dainippon Jochugiku Kabushiki Kaisha. 5-Acetyl furfurylester of chrysanthemumic acid. 3,968,238, Cl. 424-285.000.

Katzakian, Arthur, Jr.: *See—*
Steele, Roger B.; and Katzakian, Arthur, Jr., 3,968,135.

Kaufhold, Manfred; and Kett, Harald, to Chemische Werke Huls Aktiengesellschaft. Method for preparing straight-chain primary alcohols. 3,968,177, Cl. 260-638.00R.

Kaufmann, David P. Storage method employing severable walled container having a continuously mergible cover. 3,967,773, Cl. 229-51.0DB.

Kauneckas, John J. Data recording system for automatic cameras. 3,968,505, Cl. 354-106.000.

Kavalir, Jaroslav: *See—*
Hajek, Frantisek; Studnicka, Miroslav; and Kavalir, Jaroslav, 3,968,436.

Kawamoto, Hiroshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,967,364, Cl. 29-578.000.

Kawashima, Teruaki, to Yoshida Kogyo Kabushiki Kaisha. Slider for heavy duty slide fasteners. 3,967,350, Cl. 24-205.14R.

Kaye, Gordon E., to P. R. Mallory & Co. Inc. Battery and case for application in random mode to supply proper polarity to apparatus to be energized. 3,967,979, Cl. 136-173.000.

Kaye, Stanton H.: *See—*
Seiter, Charles, 3,967,579.

Kear, Bernard H.: *See—*
Giamei, Anthony F.; and Kear, Bernard H., 3,967,355.

Keblys, Kestutis A.: *See—*
Cofficld, Thomas H.; and Keblys, Kestutis A., 3,967,958.

Kel-Win Manufacturing Company, Inc.: *See—*
Keller, Robert J., III, 3,967,811.

Keller, Helen; and Keller, Raymond J. Millicane glass and a method for its production. 3,967,944, Cl. 65-36.000.

Keller, Raymond J.: *See—*
Keller, Helen; and Keller, Raymond J., 3,967,944.

Keller, Robert J., III, to Kel-Win Manufacturing Company, Inc. All plastic valve construction. 3,967,811, Cl. 251-175.000.

Kelley, Charles S.; and Westlund, James A. Automatic grab crane. 3,967,394, Cl. 37-71.000.

Kelley Company, Inc.: *See—*
Artzberger, Thomas G., 3,967,337.

Kelley, Fred W., Jr., to General Electric Company. Remote voltage sensor for power system regulation. 3,968,432, Cl. 324-107.000.

Kelly, Nathan: *See—*
Ault, Robert L.; and Kelly, Nathan, 3,967,426.

Kelsey-Hayes Company: *See—*
Hall, Richard W.; Schutte, Daniel A.; and Sonnenberg, Sven, 3,967,542.
Kendrick, William D.; and Frazier, Bruce J., to Halliburton Company. High pressure tubular swivel joint. 3,967,841, Cl. 285-276.000.
Kendrick, William D., to Halliburton Company. High pressure tubular swivel joint. 3,967,842, Cl. 285-276.000.
Keraus, Roman; Schulz, Gerhard; von Munchhofen, Caspar; and Hofmann, Heinrich, to Messerschmitt-Bolkow-Blohm GmbH. Flammability promoting ammunition for use against airborne targets. 3,967,553, Cl. 102-66.000.
Kerekes, Bela, to Egyesult Izzolampa Es Villamossagi Resvenytarsasag. Process for manufacturing tubeless vacuum electric discharge lamps. 3,967,871, Cl. 316-4.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Kastening, Bertel; and Faul, Wolfgang, 3,968,273.
Kett, Harald: *See—*
Kaufhold, Manfred; and Kett, Harald, 3,968,177.
Kiefer, Hans Walter: *See—*
Henninger, Heinz Willi; Riethmuller, Lothar; Kiefer, Hans Walter; and Spreitzhofer, Ernst Gunther Robert, 3,967,900.
Kienlen, Loren C.; and Poppler, Jack H., to Doormaid, Inc. Collapsible trivet. 3,967,803, Cl. 248-152.000.
Kihara, Nobutoshi; and Miki, Tsuguo, to Sony Corporation. Magnetic recording and/or reproducing apparatus for videotape editing. 3,968,518, Cl. 360-14.000.
Kikugawa, Kiyomi: *See—*
Suchiro, Hideo; Kikugawa, Kiyomi; Ichino, Motonobu; and Nakamura, Tokuro, 3,968,102.
Kimura, Yoshinobu: *See—*
Kuroyahagi, Moritaka; Kimura, Yoshinobu; Takeuchi, Hirotoku; and Takegami, Masao, 3,967,483.
King, James E.: *See—*
Francel, Josef; King, James E.; and Woulbroun, John M., 3,967,973.
King, Raymond J., to Northwest Engineering Company. Material handling apparatus with improved fail-safe brake system. 3,967,706, Cl. 188-170.000.
Kinoshita, Hiroshi: *See—*
Iwaska, Tatsuo; Yuminaka, Takeo; Kancko, Takashi; and Kinoshita, Hiroshi, 3,967,702.
Kirn, Manfred: *See—*
Stroezel, Reinhold; Hettich, Alfred; and Kirn, Manfred, 3,967,711.
Kishiwada, Susumu: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Atsumi, Akihiko; Ichihashi, Hiroshi; and Nagaoka, Yoshihiko, 3,968,166.
Klann, Paul A. Valve for pipe organs. 3,967,522, Cl. 84-334.000.
Klann, Paul A. Optical distortion device. 3,967,898, Cl. 355-110.000.
Kleemann, Alois: *See—*
Reinert, Gerhard; and Kleemann, Alois, 3,968,298.
Klein, Alfons; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of 5-isopropyl-3-methyl-phenol. 3,968,173, Cl. 260-626.00T.
Klein, Enrique J.: *See—*
Thompson, Lester E.; Klein, Enrique J.; and Lee, Myron E., 3,967,549.
Klein, Richard G.: *See—*
Nachtigal, Chester L.; Klein, Richard G.; and Maddux, Kenneth C., 3,967,515.
Kloefkorn, Earl W.; and Kloefkorn, Melvin L. Combine conveyor means. 3,967,719, Cl. 198-175.000.
Kloefkorn, Melvin L.: *See—*
Kloefkorn, Earl W.; and Kloefkorn, Melvin L., 3,967,719.
Knauff, Karl-Georg: *See—*
Rau, Hans; and Knauff, Karl-Georg, 3,967,986.
Kneile, Karl, to Robert Krause KG Zweiniederlassung Weilheim/Teck. Frame structure for furniture, especially table frame structure. 3,967,804, Cl. 248-188.200.
Knifton, John F., to Texaco Inc. Carboxylation process for preparing linear fatty acids or esters. 3,968,133, Cl. 260-410.90R.
Knoch, Wolfgang: *See—*
Nopper, Herbert; and Knoch, Wolfgang, 3,968,296.
Knudson, Gary A. Building method. 3,967,430, Cl. 52-745.000.
Kobayakawa, Masanao: *See—*
Narumi, Akio; Takahisa, Shuji; Kobayakawa, Masanao; and Fujimoto, Yoshihal, 3,967,440.
Kobayashi, Akira: *See—*
Sano, Takezo; and Kobayashi, Akira, 3,967,932.
Kobayashi, Osamu: *See—*
Ichikawa, Yataro; Yamanaka, Yoshiyuki; Naruchi, Tatuyuki; Kobayashi, Osamu; and Sakota, Koichiro, 3,968,172.
Kobayashi, Takeo: *See—*
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Koch, Henning: *See—*
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Kohjin Co., Ltd.: *See—*
Suchiro, Hideo; Kikugawa, Kiyomi; Ichino, Motonobu; and Nakamura, Tokuro, 3,968,102.
Kohl, Hans: *See—*
Nazareth, Julia; Gandhi, Naren M.; Divekar, Pandurang V.; de Souza, Noel J.; and Kohl, Hans, 3,968,122.
Kohlhage, Hermann; and Link, Manfred, to Triumph Werke Nurnberg A.G. Intermittent drive system for typewriters. 3,967,715, Cl. 197-16.000.
Kojima, Soji: *See—*
Murano, Minoru; Yanabu, Satoru; Nishiwaki, Susumu; Kojima, Soji; and Ueki, Teiichi, 3,968,393.
Kokaly, Joseph, to Caterpillar Tractor Co. Forward-reverse valve for elevating scraper drive. 3,967,532, Cl. 91-420.000.
Kokusan Denki Co., Ltd.: *See—*
Kondo, Tetsuya, 3,967,604.
Kolblin, Rolf: *See—*
Ramsperger, Hans; and Kolblin, Rolf, 3,967,816.
Kollar, John, to Halcon International, Inc. Method of producing polyhydric compounds. 3,968,174, Cl. 260-635.00R.
Kollar, John, to Halcon International, Inc. Method of producing polyhydric compounds. 3,968,175, Cl. 260-635.00R.
Kolling, Heinrich; Widdig, Arno; Thomas, Herbert; and Schulz, Hans Peter, to Bayer Aktiengesellschaft. Benzoylphenylisothiourcas. 3,968,314, Cl. 260-470.000.
Kollmeier, Michael. Combined wax and edge sharpening apparatus for skiers. 3,968,345, Cl. 219-228.000.
Koma, Kotaro: *See—*
Yagi, Hajime; Tsuyuki, Tadaharu; Koma, Kotaro; and Miyazawa, Yoshihiro, 3,968,511.
Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Motion picture camera capable of synchronized sound recording. 3,967,886, Cl. 352-29.000.
Komine, Yoshio, to Canon Kabushiki Kaisha. Interchangeable lens barrel structure. 3,968,504, Cl. 354-46.000.
Kondo, Tetsuya, to Kokusan Denki Co., Ltd. Device for preventing an internal combustion engine from revolving at more than the predetermined speed. 3,967,604, Cl. 123-118.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Shiozawa, Kazuo; and Kajiwara, Junji, 3,968,502.
Konrad, Charles Edward, to General Electric Company. Bypass contactor control. 3,968,414, Cl. 318-341.000.
Kopydlowski, Donald J.: *See—*
Tur, Charles J.; and Kopydlowski, Donald J., 3,967,700.
Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Synthesis of penniclavine and elymoclavine. 3,968,112, Cl. 260-285.500.
Kornfeld, Edmund C.: *See—*
Bach, Nicholas J.; and Kornfeld, Edmund C., 3,968,111.
Kosal, Kathleen M. Fingernail cap. 3,967,631, Cl. 132-73.000.
Koster, William Henry; and Dolfini, Joseph Edward, to E. R. Squibb & Sons, Inc. Production of 2-(thio substituted)cephalosporin sulfoxides and 2-(thio substituted)cephalosporins. 3,968,109, Cl. 260-243.00C.
Kovalev, Anatoly Fedorovich: *See—*
Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Guskov, Konstantin Nikolaevich, 3,967,996.
Kovyryalkin, Igor Ivanovich: *See—*
Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Guskov, Konstantin Nikolaevich, 3,967,996.
Kowald, Bernhard: *See—*
Sommerfeld, Dieter; Kowald, Bernhard; and Winkels, Monika, 3,967,999.
Kraft, Gerald A.: *See—*
Atwell, Charles Gary; Tew, Gilbert W.; Kraft, Gerald A.; and Farics, Joseph A., Jr., 3,967,858.
Kraftco Corporation: *See—*
Goodman, Louis P., 3,968,261.
Kraftwerk Union Aktiengesellschaft: *See—*
Lambrecht, Dietrich; and Weghaupt, Erich, 3,968,388.
Kramer, Wolfgang; Buchel, Karl Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic compositions. 3,968,229, Cl. 424-273.000.
Kramming, Erik, to Bengt Lundin AB. Method of storing handle bags. 3,967,775, Cl. 229-54.00R.
Krauss-Maffei Aktiengesellschaft: *See—*
Schwarzler, Peter, 3,967,561.
Krolik, Paul P., to Alston, Inc. Mechanical gum massager. 3,967,617, Cl. 128-36.000.
Kropman, Johannes Gerardus Albertus: *See—*
van Dijkum, Adalbertus Hermanus Jacobus Nieveen; and Kropman, Johannes Gerardus Albertus, 3,968,439.
Krumkalns, Eriks Viktors: *See—*
Benefiel, Robert Lee; and Krumkalns, Eriks Viktors, 3,967,949.
Kruseman, Jan: *See—*
Groux, Michel John Arthur; Dalan, Ernesto; Kruseman, Jan; and Bertschy, Pierre Yves, 3,968,097.
Krystie, Allan: *See—*
Boyd, Mervin S., 3,967,333.
Kubacki, Edward F.; Backe, Bengt S.; Gold, Vance B.; Jessogne, Harold J.; Kudert, Frederick G.; Lemke, Harold C.; and Timmins, William D., to American Can Company. Production of closed bottom shells. 3,967,482, Cl. 72-7.000.

Kubota, Kanemitsu; and Nagasaki, Jin, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display device having extended service life. 3,967,882, Cl. 350-160.0LC.

Kubota Tekko Kabushiki Kaisha (Kubota, Ltd.): *See—*
Inujima, Kazuo; Tokunaga, Kiyohiko; and Sotobayashi, Yoshiyuki, 3,968,039.

Kudert, Frederick G.: *See—*
Kubacki, Edward F.; Backe, Bengt S.; Gold, Vance B.; Jessogne, Harold J.; Kudert, Frederick G.; Lemke, Harold C.; and Timmins, William D., 3,967,482.

Kuhle, Engelbert: *See—*
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,968,232.

Kukolja, Stjepan P.; and Lammert, Steven R., to Eli Lilly and Company. Process for preparing a desacetoxycephalosporin from a penam and/or a cepham compound. 3,968,108, Cl. 260-243.00C.

Kuller, Herbert, to Siemens Aktiengesellschaft. Apparatus for determining the phase difference between the rolling oscillation of a ship and a liquid contained in a stabilizing tank. 3,968,353, Cl. 235-150.200.

Kulsa, Peter: *See—*
Hoff, Dale R.; Kulsa, Peter; Mrozik, Helmut H.; and Rogers, Edward F., 3,968,228.

Kumagai, Naoki, to Itogihan Company, Ltd. Apparatus for supplying thin, flat articles. 3,967,739, Cl. 214-6.00C.

Kumagai, Tooru: *See—*
Sahara, Hiroshi; and Kumagai, Tooru, 3,968,402.

Kunz, Bernard L., to Emerson Electric Co. Electrically operated expansion valve for refrigeration control. 3,967,781, Cl. 236-68.00R.

Kunzelmann, Hans: *See—*
Wolf, Karlheinz; Hornle, Reinhold; Kunzelmann, Hans; and Hild, Theodor, 3,967,922.

Kupfer, Mark Alexandrovich: *See—*
Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Guskov, Konstantin Nikolaevich, 3,967,996.

Kupper, Friedrich-Wilhelm; and Streck, Roland, to Chemische Werke Huls Aktiengesellschaft. Process for the production of pure cyclopentene. 3,968,180, Cl. 260-666.00A.

Kurasawa, Kazuo: *See—*
Enami, Toyoichiro; Kurasawa, Kazuo; Ii, Masaktaka; and Hashimoto, Masaru, 3,967,903.

Kuroyahagi, Moritaka; Kimura, Yoshinobu; Takeuchi, Hirotoku; and Takegami, Masao, to Aida Engineering Kabushiki Kaisha; and Zaidan Hojin Kikai Shinko Kyokai. Device for adjusting a preload and additionally compensating the slide in a press. 3,967,483, Cl. 72-21.000.

Kuznetsov, Jury Igorevich: *See—*
Rozenfeld, Iosif Lvovich; Persiantseva, Viveya Pavlovna; Kuznetsov, Jury Igorevich; and Petrov, Nikolai Mikhailovich, 3,967,926.

Labofina S.A.: *See—*
Andre, Jacques Maurice Jules Ghislain; Cahen, Raymond Mark; Debus, Henri Robert; Lammers, Rene Odon; and van Thillo, Hugo Johannes, 3,968,225.

Lacefield, William B.; and Marshall, Winston S., to Eli Lilly and Company. Arylacetylene compounds as antithrombotic agents. 3,968,251, Cl. 424-340.000.

La Charite, George J., to La Charite, Rolland G. C.; and Rowley, Gene V., part interest to each. Motorcycle lifting device. 3,967,834, Cl. 280-291.000.

La Charite, Rolland G. C.: *See—*
La Charite, George J., 3,967,834.

La Croix, Eric Arthur Stuart: *See—*
Mamalis, Patrick; La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,968,220.

Lacroix, Guy-Bernard: *See—*
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Thiolliere, Jean Pierre; Abblard, Jean Georges; Lacroix, Guy-Bernard; Pillon, Daniel Jean; Ducret, Jacques Joseph; and Thizy, Andre, 3,968,208.

LaDonna, Richard V.: *See—*
Watson, P. Keith; Cressman, Paul J.; and LaDonna, Richard V., 3,967,960.

Lam, Henry W.: *See—*
Tajbl, Daniel G.; Lee, Bernard S.; Schora, Frank C., Jr.; and Lam, Henry W., 3,967,936.

Lamberti, Vincent, to Lever Brothers Company. Sulfosuccinate derivatives as detergent builders. 3,968,110, Cl. 260-247.10E.

Lambrecht, Dietrich; and Weghaupt, Erich, to Kraftwerk Union Aktiengesellschaft. Electric machines, particularly turbogenerators, having liquid cooled rotors. 3,968,388, Cl. 310-53.000.

Lammers, Rene Odon: *See—*
Andre, Jacques Maurice Jules Ghislain; Cahen, Raymond Mark; Debus, Henri Robert; Lammers, Rene Odon; and van Thillo, Hugo Johannes, 3,968,225.

Lammert, Steven R.: *See—*
Kukolja, Stjepan P.; and Lammert, Steven R., 3,968,108.

Lampen, Stephen H.; and Hearn, William E., to Lampen, Stephen H. Touch controlled voltage-divider device. 3,968,467, Cl. 338-119.000.

Lancor, Ellen B., administratrix: *See—*
Lancor, Joseph H., Jr., deceased; and Ferrari, Leonard A., 3,967,888.
Lancor, Joseph H., Jr., deceased; and Ferrari, Leonard A., 3,968,506.

Lancor, Joseph H., Jr., deceased (by Lancor, Ellen B., administratrix); and Ferrari, Leonard A., to Bell & Howell Company. Image display from continuously moving image carrier. 3,967,888, Cl. 352-109.000.

Lancor, Joseph H., Jr., deceased (by Lancor, Ellen B., administratrix); and Ferrari, Leonard A., to Bell & Howell Company. Image display from continuously moving image carrier. 3,968,506, Cl. 352-109.000.

Lanc, George C.; Cartwright, Cyril A.; and Elmslie, Keith W., to Warner-Lambert Company. Sputter coating method. 3,968,018, Cl. 204-192.000.

Langberg Associates, Inc.: *See—*
Langberg, Edwin, 3,967,994.

Langberg, Edwin, to Langberg Associates, Inc. Method of inspection for splices used for joining webs in a manufacturing process. 3,967,994, Cl. 156-64.000.

Langen & Co.: *See—*
Strauff, Gunther, 3,967,537.

Langston, Perry Robert, Jr.; and Turetzky, Melvin Norris, to International Business Machines Corporation. Firing process for forming a multilayer glass-metal module. 3,968,193, Cl. 264-61.000.

Lanz, William Edwin: *See—*
Merkel, Russell Dwane; and Lanz, William Edwin, 3,967,361.

Lartigau, Guy; and Bost, Pierre-Etienne, to Rhone-Poulenc S.A. Preparation of acetophenone. 3,968,162, Cl. 260-592.000.

Last, James David; and Roberts, Emyr Wyn, to University of North Wales. Digital phase comparators. 3,968,493, Cl. 343-105.00R.

Lathe, Rhea C.: *See—*
Yurkunas, John A., Jr.; and Lathe, Rhea C., 3,967,567.

Laughinghouse, Charles Leo, to CGR Medical Corporation. Tube protection circuit for X-ray generators. 3,968,372, Cl. 250-402.000.

Lauterbach, Gunter: *See—*
Schacht, Erich; Lauterbach, Gunter; Mehrhof, Werner; Nowak, Herbert; and Simane, Zdenek, 3,968,143.

Lawrence Peska Associates, Inc.: *See—*
Boyd, Mervin S., 3,967,333.
Cmolik, Charles F., 3,967,340.
Coutts, Barbara, 3,967,575.
Davis, Daniel L., 3,967,770.
Dials, Donald, 3,968,417.
Dobarganes, Joseph, 3,968,433.
Gallegos, Donald L., Sr., 3,968,344.
Hamilton, Eric, 3,968,357.
Hodska, Nicholas S., 3,967,410.
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Hoffman, Robert, 3,967,805.
Nolte, Ted W., 3,967,360.
Olive, Ernest Gene, 3,967,324.
Rodriguez, Ennio Chinio, 3,967,325.
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Soldano, Michael J., 3,967,512.
Thorpe, Dinsdale, 3,968,332.
Weber, Frank X., 3,968,484.
Zawadowsky, Bohdan, 3,967,330.

Lay, Michael T.: *See—*
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Lazet, Frank J., to Philadelphia Quartz Company. Soluble silicate disks. 3,967,972, Cl. 106-74.000.

Lazzaretti, Louis G.: *See—*
Capriotti, Alfred J.; and Lazzaretti, Louis G., 3,967,362.

Lea, Freeman Roderick, to Santa Fe International Corporation. Anchoring system and chain stopper therefor. 3,967,572, Cl. 114-206.00R.

Leach, Clifford, Sr. Manual knitting frame. 3,967,467, Cl. 66-4.000.

Lee, Bernard S.: *See—*
Tajbl, Daniel G.; Lee, Bernard S.; Schora, Frank C., Jr.; and Lam, Henry W., 3,967,936.

Lee, Myron E.: *See—*
Thompson, Lester E.; Klein, Enrique J.; and Lee, Myron E., 3,967,549.

Lee, Stephen Arthur: *See—*
Cardy, Charles Frederick; and Lee, Stephen Arthur, 3,968,061.

Leeds and Micallef: *See—*
Micallef, Lewis A., 3,967,765.

Leenhouts, Albert C., to Superior Electric Company, The. Motor control for a stepping motor. 3,968,416, Cl. 318-696.000.

LeFevre, Cecil W.: *See—*
Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., 3,968,138.

Legris, Andre, to Societe Legris France S.A. Banjo type pipe unions. 3,967,838, Cl. 285-190.000.

Lehmann, Louis E.; and Luft, Ralph J., to General Electric Company. Fused decorative string set. 3,968,398, Cl. 315-185.00S.

Lehmann, Rudiger, to Dual Gebruder Stiedinger, Firma. Synchronized induction motor. 3,967,827, Cl. 274-1.00E.

Lei, George Y.: *See—*
Economy, James; and Lei, George Y., 3,967,925.

Leibundgut, James A., to Hein-Werner Corporation. High capacity hand portable jack. 3,967,814, Cl. 254-8.00B.

Leich, Robert A., to Camdex, Inc. Apparatus for lubricating and sizing slugs. 3,967,526, Cl. 86-19.000.

Leister, Norman A.; and Piccolini, Richard J., to Rohm and Haas Company. Copolymers of 1-alkenes and acrylic acid derivatives. 3,968,148, Cl. 260-486.00R.

Leiterman, Robert W.: *See*—
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Lerich, Lester, to Wej-It Expansion Products, Inc. Spring action expansion bolt. 3,967,525, Cl. 85-79.000.

Lesner, Richard S.; and MacDonald, Murdo A., to Chicago Pneumatic Tool Company, a part interest. Power driven screw driver with a screw holding nosepiece. 3,967,664, Cl. 144-32.00R.

Leuschner, Horst, to Texas Instruments Incorporated. Solid state television channel selection system. 3,968,443, Cl. 325-455.000.

Lever Brothers Company: *See*—
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Leverenz, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of azo dyestuffs containing cyano groups. 3,968,099, Cl. 260-208.000.

Lewis, David Malcolm, to I.W.S. Nominee Company Limited. Esters of sulfothio alkanoic acids. 3,968,146, Cl. 260-481.00R.

Lewis, Jonathan Jay. Combination container and ball goal with reflector. 3,967,819, Cl. 273-103.000.

Leybold-Heraeus-Verwaltung G.m.b.H.: *See*—
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Libbey-Owens-Ford Company: *See*—
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Liberty Glass Company: *See*—
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Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Birglechner, Georg; and Botzenhardt, Leonard, 3,967,366.
Meisel, Gerhard; Sussenbach, Helmut; and Zimmermann, Harry, 3,968,500.

Lieding, Calvin A., to Irrigation Specialties Company. Irrigation valve with metal seat. 3,967,808, Cl. 251-46.000.

Lilcs, Arthur W.; and Schwartz, Robert D., to Exxon Research and Engineering Company. Method of treating waste water. 3,968,036, Cl. 210-15.000.

Liljestrand, Walter Emanuel, to Smith International, Inc. Mud saver valve. 3,967,679, Cl. 166-224.00A.

Lin, Luke C., to Xerox Corporation. Photoelectrophoretic imaging process employing a dark charge injecting agent - alkyd resin coating. 3,967,961, Cl. 96-1.200.

Lin, Yeong S.: *See*—
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Lindahl, Herbert S.: *See*—
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Lindblad, Oskar Lennart. Actuation means preferably intended to be used in connection with safety belts of vehicles. 3,967,510, Cl. 74-575.000.

Linde Aktiengesellschaft: *See*—
Daeschler, Werner; Finkenauer, Hans-Jakob; Frey, Gerhard; Rainer, Hans; and Schramm, Walter, 3,967,938.

Link, Manfred: *See*—
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Liquichimica S.p.A.: *See*—
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Liskey, Jerald L.: *See*—
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Litzenberg, David P. Centrifugal pump. 3,967,915, Cl. 415-209.000.

Livesay, Richard E.: *See*—
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Lloyd, John Edward, to Imperial Chemical Industries Limited. Process for the production of acrolein. 3,968,164, Cl. 260-604.00R.

Lockett, Eugene C. Solvent cleaning composition. 3,968,049, Cl. 252-171.000.

Lockheed Petroleum Services Ltd.: *See*—
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Lockwood, William G. Automatic tape dispenser. 3,968,001, Cl. 156-523.000.

Logemann, Larry R.: *See*—
Cole, Carroll R.; Guhl, Richard E.; and Logemann, Larry R., 3,967,709.

Logsdon, Hillard Glenn, to Aeronca, Inc. Air volume regulator for air conditioning systems. 3,967,642, Cl. 137-499.000.

Logsdon, Hillard Glenn, to Aeronca, Inc. Air mixing valve having a thermal motor actuator for effecting adjustment. 3,967,779, Cl. 236-49.000.

Lohaus, Gerhard; and Dittmar, Walter, to Hoechst Aktiengesellschaft. Process for the manufacture of 1-hydroxy-2-pyridones. 3,968,118, Cl. 260-297.00Z.

Loigerot, Jean, to Association pour la Rationalisation et la Mechanisation de l'Exploitation Forestiere. Striping device. 3,967,663, Cl. 144-2.00Z.

Loiseau, Gerard: *See*—
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Lomagno, Marcel. Safety stand for irons. 3,967,802, Cl. 248-117.400.

Longobardi, Giampiero: *See*—
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Look, Robert A. Ski lock. 3,967,476, Cl. 70-58.000.

Looney, John H.; Jones, Hugh L.; and Tickner, Donald R., to Rank Xerox Ltd. Variable edge fadeout apparatus for electrostatic reproduction machines. 3,967,896, Cl. 355-14.000.

Lora, Thad A.: *See*—
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Lovie, Peter M., to Engineering Technology Analysts, Inc. Self-elevating offshore drilling unit legs. 3,967,457, Cl. 61-46.500.

Lowe, Peter R.; and Tyler, Tommy N., to Honeywell Inc. Apparatus for producing continuous graphic displays from intermittantly sampled data. 3,968,499, Cl. 346-110.00R.

Lucas Electrical Company Limited, The: *See*—
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Lucas, Gary M.: *See*—
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Ludwig, Martin, to Siemens Aktiengesellschaft. Code generator for teleprinters or data printers. 3,968,330, Cl. 178-79.000.

Luedtke, Lloyd A. Tractor pull sled. 3,967,496, Cl. 73-141.00R.

Luft, Karl Friedrich, to Bergwerksverband GmbH. Non-dispersive infrared gas analysis device with triple layer receiver. 3,968,369, Cl. 250-344.000.

Luft, Karl Friedrich, to Bergwerksverband GmbH. Non-dispersive infrared gas analyzer. 3,968,370, Cl. 250-344.000.

Luft, Ralph J.: *See*—
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Lund, Allan M. Adjustable routing template. 3,967,665, Cl. 144-144.50R.

Lund, William J. Game board unit. 3,967,824, Cl. 273-110.000.

Lurssen, Klaus: *See*—
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Lutringer, Cleo Margaret. Splash guard. 3,967,643, Cl. 137-562.000.

Lutz, Roman, to Siemens Aktiengesellschaft. Circuit arrangement for synchronizing the letters/figures levels of several input and output devices in teleprinters. 3,968,324, Cl. 178-2.00R.

Luzzi, John J.: *See*—
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Lyman, Merton C., Jr., to Rockwell International Corporation. Harness support and linkage. 3,967,653, Cl. 139-88.000.

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Maas, Michael, to Siemens Aktiengesellschaft. Installation for the detection and processing of electrical signals. 3,968,430, Cl. 324-77.00B.

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Machlett Laboratories, Incorporated, The: *See*—
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Machon, Charles S., to Risdon Manufacturing Company, The. Pump for dispensing liquid from a container in a generally continuous manner. 3,967,762, Cl. 222-321.000.

MacMurray, Robert R., to American Agtech, Inc. Rose growth stimulation. 3,967,953, Cl. 71-97.000.

Maddux, Kenneth C.: *See*—
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Maeda, Toru: *See*—
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Shimada, Kazushi; Maeda, Toru; Iwaoka, Yasuhiko; and Anzai, Hisao, 3,968,090.

Maier, Karl, to BASF Aktiengesellschaft. Manufacture of 1-amino-2-alkoxy-4-hydroxyanthraquinones. 3,968,131, Cl. 260-380.000.

Maisonneuve, Hubert; von Beckmann, Helmuth; and Sun, Joseph C., to Canron, Inc. Undercutter with rotary trencher. 3,967,396, Cl. 37-104.000.

Majewicz, Edward J., to Xerox Corporation. Illuminating apparatus. 3,967,893, Cl. 355-4.000.

Malata, Peter; Buchsteiner, Josef; and Rosenstatter, Otto, to Dentalwerk Burmoos Gesellschaft m.b.H. Clamping mechanism for reciprocating dental tool. 3,967,380, Cl. 32-27.000.

Malatesta, Alberto: *See*—
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Maloney, John E., Jr.; and Zaccagni, Richard F., to ZMC, Inc. Rain gutter and downspout connection. 3,967,452, Cl. 61-15.000.

Mamalis, Patrick; La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, to Beecham Group Limited. Imidazole insecticides. 3,968,220, Cl. 424-273.000.

Manautou, Jorge Martinez; and Garcia, Adolfo Rosado, to Alza Corporation. Test implement and test method for colorimetrically determining whether a female is fertile or pregnant. 3,968,011, Cl. 195-103.50R.

Mancini, Derek, to Portion Packaging Limited. Cartonning apparatus. 3,967,434, Cl. 53-186.000.

Manfredi, Frank A. Exhaust purifier system. 3,967,445, Cl. 60-279.000.
Mani, Inder; and Shand, Alexander, to Dow Chemical Company, The. Plastic pigments for paper coatings. 3,968,319, Cl. 428-511.000.
Manning, Richard William, to Air Products and Chemicals, Inc. Welding torch with integral current control. 3,968,341, Cl. 219-132.000.
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Marcade, Roque Denis, to Whirlpool Corporation. Delayed on quick off regulator circuit for appliance control. 3,968,421, Cl. 323-19.000.
Marchegiani, Daniel. Motion simulator. 3,967,387, Cl. 35-12.00P.
Marcon, Christian, to VCA Corporation. Actuators for pressurized containers. 3,967,760, Cl. 222-153.000.
Marik, Charles J.: *See—*
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Matsumoto, Fukuo; and Okada, Teizi, to Toray Textiles Inc. Automatic knitting yarn replacing apparatus. 3,967,471, Cl. 66-161.000.
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Matthey Rustenburg Refiners (Proprietary) Limited: *See—*
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McMahon, Donald H., to Sperry Rand Corporation. Spurious signal removal in optical processor fingerprint identification apparatus. 3,968,476, Cl. 340-146.30E.
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Oguchi, Atsushi; Otaguchi, Minoru; Nobuki, Minoru; and Kaieda, Yoshinari, to National Research Institute for Metals. Method for extruding brittle materials. 3,967,485, Cl. 72-60.000.
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Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio; Takao, Hiroshi; and Ayano, Masami, to Sumitomo Chemical Company, Limited. Extraction of acrylic acid and/or methacrylic acid with a solvent mixture of methylethylketone and xylene or ethylbenzene. 3,968,153, Cl. 260-526.00N.
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Okada, Yoshinori; Toyoshima, Terumi; and Mori, Eizo, to Matsushita Electric Industrial Co., Ltd. Multiple tuning system. 3,968,464, Cl. 334-50.000.
Okamura Manufacturing Company Limited: *See—*
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Okamura, Masahiro: *See—*
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Okawa, Isao, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for dismissing or decreasing sound's energy. 3,967,693, Cl. 181-33.00G.
Okonogi, Shigeo: *See—*
Ogasa, Katsuhiro; Okonogi, Shigeo; Yuguchi, Hiroya; Hayashi, Yoshinobu; and Miyazaki, Yusuke, 3,968,267.
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Walter, Lothar; Burkl, Erich; Schurger, Rainer; and Olschewski, Armin, 3,967,865.

Olszewski, Jerzy Adam; and Gabriel, Anthony P., to General Cable Corporation. Offset "O" internal shield design for PCM telephone cables. 3,968,321, Cl. 174-36.000.

O'Malley, James J., to Xerox Corporation. Developing with toner polymer having crystalline and amorphous segments. 3,967,962, Cl. 96-15.00D.

O'Meara, Thomas R., to Hughes Aircraft Company. Method and apparatus for maintaining far field spatial coherency in electromagnetic transmitting systems. 3,967,899, Cl. 356-5.000.

Ong, Kan Kie, to U.S. Philips Corporation. Receiver including an automatic tuning correction suppression circuit coupled to a tuning member. 3,968,437, Cl. 325-422.000.

Ono, Isao; Iiguni, Tetsuo; and Akashi, Mitsumasa, to Rohm and Haas Company. Process for producing acrolein and acrylic acid. 3,968,165, Cl. 260-604.00R.

Onoda Chemical Industry Company, Limited: *See—*
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Onuki, Akira: *See—*
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Oshima, Akira; Yoshihara, Keisuke; Shiki, Mikio; and Ikeda, Tuneo, to Mitsubishi Rayon Co., Ltd. Mar-resistant synthetic resin shaped article. 3,968,305, Cl. 428-334.000.

Oshima, Akira: *See—*
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Ostrem, Obert M., to Continental Can Company, Inc. Pull tab anti-rotation mounting. 3,967,754, Cl. 220-273.000.

Ostrop, Ernst, to Eberhard Hoesch & Sohne. Plate filter with horizontally arranged bilaterally acting filters. 3,968,040, Cl. 210-225.000.

Otaguchi, Minoru: *See—*
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Otto, Gunther Siegfried, to G.A.O. Gesellschaft fur Automation und Organisation m.b.H. Identification card. 3,967,400, Cl. 40-2.200.

Oulevay, Serge; and Niederhauser, Marc, to Bolex International SA. Drive and stopping method and device for a cinematographic camera. 3,967,889, Cl. 352-174.000.

Outboard Marine Corporation: *See—*
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P. R. Mallory & Co. Inc.: *See—*
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Padilla, Miguel. Audiometric method and apparatus for testing the effectiveness of hearing protective devices. 3,968,334, Cl. 179-175.000.

Pagnotta, Gasper; and Eskesen, John H., to General Electric Company. Gas turbine bucket-root sidewall piece seals. 3,967,353, Cl. 29-156.80R.

Pain, Barrie Reginald Kirby; and Wilhelmsson, Gunnar Robert, to Aktiebolaget Svenska Flaktfabriken. Purifying apparatus. 3,967,942, Cl. 55-223.000.

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Palazzolo, Salvatore E.: *See—*
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Pallos, Ferenc M.; DeBaun, Jack R.; and Gutman, Arnold D., to Stauffer Chemical Company. 3-(4'-Chlorophenyl)-5-methyl-4,5-dihydro-1,2,4-oxadiazole, its use as an anti-inflammatory agent. 3,968,224, Cl. 424-272.000.

Pallos, Ferenc M.; and Tseng, Chien K., to Stauffer Chemical Company. Derivatives of certain geranyl phenyl ethers and their use in controlling insects. 3,968,252, Cl. 424-337.000.

Palmer, David Nelson, to Combustion Engineering, Inc. Method of preparing conductive room temperature vulcanizing material. 3,968,055, Cl. 252-506.000.

Pankova, Klavdia Vasilievna: *See—*
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Papineau, Ronald I. Energy generating system. 3,967,589, Cl. 122-4.00R.

Papsco, Inc.: *See—*
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Papsco, William G.; and Cohn, Harry, Jr., to Papsco, Inc. Portable wall system and method of installing same. 3,967,420, Cl. 52-127.000.

Paraskos, John A.: *See—*
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Parker, Charles O., to Rohm and Haas Company. Process for preparing perfluoroguanidine and difluorourea. 3,968,158, Cl. 260-553.00R.

Parker, David William: *See—*
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Parker, Jimmy L. Paver feed control. 3,967,912, Cl. 404-84.000.

Patterson, Lawrence. Decorative ultraviolet lamp fixture. 3,967,927, Cl. 21-74.00R.

Patton, Bobbie J.; and Slover, Vasel R., to Mobil Oil Corporation. Weight-on-drill-bit and torque-measuring apparatus. 3,968,473, Cl. 340-18.0LD.

Pauwels, Edward M., to Bendix Corporation, The. Valve for force-reversing modulator. 3,967,636, Cl. 137-106.000.

Payne, Alexander William. Cranes with look independent of sheave block. 3,967,735, Cl. 212-3.000.

Payne, Bernard M.; Cloute, John R.; Johnson, Edward A.; Brown, Arthur V., Jr.; and Oborsh, Edward V., to Ralston Purina Company. Protein food product and method of making. 3,968,269, Cl. 426-629.000.

Payne, John Blunden, to Matthey Rustenburg Refiners (Proprietary) Limited. Separation of noble metals. 3,967,956, Cl. 75-101.0BE.

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Pearlman, Martin B. Surface treatment. 3,968,313, Cl. 428-450.000.

Pearman, Arthur William; and Wright, Steven James, to Porvair Limited. Water vapor permeable sheet material. 3,968,292, Cl. 428-213.000.

Penn Fishing Tackle Mfg. Co.: *See—*
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Peralta, Roberto S.; Duffy, Torrance L., II; and Derflinger, Raymond E., to Conveyor Systems, Inc. Depalletizing and pallet stacking apparatus. 3,967,737, Cl. 214-1.0BB.

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Peyser, Leonard F.; and Hibbert, Roger L., to Machlett Laboratories, Incorporated, The. X-ray cassette holder. 3,968,375, Cl. 250-468.000.

Pezzillo, Rinaldo F., to Super Tire Engineering Company. Tire defect detector. 3,967,498, Cl. 73-146.000.

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Pierce, Arthur W.; and Stoehr, Robert A., to Cincinnati Floor Company. Portable floor construction. 3,967,428, Cl. 52-582.000.
Pierce, Daniel Thornton; Meier, Felix Andrea; and Siegmann, Hans-Christoph. Source of spin polarized electrons. 3,968,376, Cl. 250-493.000.
Pietsch, Hartmut: *See—*
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Piget, Maurice. Complex light metal framework produced by combining sectional pieces interconnected in a detachable manner by means of flexible strips having a novel structure. 3,967,427, Cl. 52-502.000.
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Posciri, Charles L. Endless bucket type excavator. 3,967,854, Cl. 299-40.000.
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Potma, Theodorus Gerhardus; and Gijzen, Wilhelmus Adrianus Henricus, to U.S. Philips Corporation. Matrix printer having detachable elements. 3,967,714, Cl. 197-1.00R.
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Pucher, Janos; and Schmieder, Antal, to Nikex Nehezipari Kulkereskedelmi Vallalat. Process and equipment for lifting secondary liquids with the energy of primary liquids. 3,967,917, Cl. 417-54.000.
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Rabilloud, Guy; and Sillion, Bernard, to Institut Francais du Petrole, des Carburants et Lubrifiants. Polyamine compositions useful as hardening agents for epoxy resins. 3,968,085, Cl. 260-75.00N.
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Rachel, Todd L., to Bendix Corporation, The. Combined electric fuel pump control circuit intermittent injection electronic fuel control systems. 3,967,598, Cl. 123-32.0EA.
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Rahtz, Dieter; Koch, Henning; and Gerhards, Erich, to Schering Aktiengesellschaft. Hydroxy phenylbutazone derivatives and their preparation. 3,968,219, Cl. 424-273.000.
Rainer, Hans: *See—*
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Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Alkyl alkanoate derivatives of substituted piperazine-diones and polymer compositions stabilized thereby. 3,968,078, Cl. 260-45.80N.

Ramsperger, Hans; and Kolblin, Rolf, to Mauser-Schaerer GmbH. Fixture block serving as a manufacturing accessory. 3,967,816, Cl. 269-9.000.

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Piepers, Gijsbrecht Gerhardus; Scholtus, Christiaan Gustaaf Adolf; and Vons, Leonard Hendrik, 3,968,008.

Reed, Samuel F., Jr., to Rohm and Haas Company. Process for the preparation of nitrogen- and fluorine-containing acrylates and methacrylates. 3,968,150, Cl. 260-486.00D.

Reed, Samuel F., Jr., to Rohm and Haas Company. Preparation of 1,2,-3-tris[1,2-bis(difluoramino)ethoxy]propane. 3,968,160, Cl. 260-584.00C.

Reed, Samuel Franklin, Jr., to Rohm and Haas Company. Nitrogen- and fluorine-containing compounds. 3,968,139, Cl. 260-467.000.

Regel, Erik; Lurssen, Klaus; and Buchel, Karl Heinz, to Bayer Aktiengesellschaft. 2-Imidazolylcarbonylbenzoic acid compounds. 3,968,120, Cl. 260-309.000.

Reifenhauser KG: *See—*
Balk, Hermann, 3,968,287.

Reifenschweiler, Otto, to U.S. Philips Corporation. Device, in particular a neutron generator, having a detachable high-voltage connection. 3,968,373, Cl. 250-419.000.

Reimbold & Strick: *See—*
Ohnemuller, Walter; and Solf, Alexander, 3,967,974.

Reinert, Gerhard; and Kloemann, Alois, to Ciba-Geigy Corporation. Process for imparting to natural keratin-containing material a permanent finish rendering the material resistant to damage by insects. 3,968,298, Cl. 428-270.000.

Reishauer AG: *See—*
Seckinger, Ernst; Vogelsanger, Emil; and Wirthlin, Robert, 3,967,415.

Reliance Electric Company: *See—*
Dixon, George Scott; and Flaczynski, Lawrence F., 3,968,434.

Research Corporation: *See—*
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Research and Development Laboratories of Ohno Co., Ltd.: *See—*
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Reuge, Guido. Presentation device with a musical movement. 3,967,755, Cl. 221-3.000.

Reussner, George H., to General Foods Corporation. Beverage mix and method. 3,968,263, Cl. 426-250.000.

Reynolds, George L., to United States of America, Army. Manually-operated firearm with forward-moving barrel and automatic breech lock. 3,967,403, Cl. 42-10.000.

Reynolds, George L., to United States of America, Army. Combination cartridge extractor-ejector. 3,967,404, Cl. 42-25.000.

Reynolds Metals Company: *See—*
Cudzik, Daniel F., 3,967,750.
Cudzik, Daniel F., 3,967,752.
Cudzik, Daniel F., 3,967,753.

Rezzonica, Carlo: *See—*
Arioli, Roberto; Arioli, Ameda; Arioli, Lorenza; and Rezzonica, Carlo, 3,967,473.

Rhoads, Lula L. Sunbathing aid. 3,967,335, Cl. 5-338.000.

Rhoden, Ivan E., to FMC Corporation. Belt drive conveyor system. 3,967,721, Cl. 198-195.000.

Rhodes, Robert A.; Orton, William L.; and Weiner, Bernard A., to United States of America, Agriculture. Method of preparing feed grain compositions. 3,968,254, Cl. 426-18.000.

Rhone-Poulenc S.A.: *See—*
Lartigau, Guy; and Bost, Pierre-Etienne, 3,968,162.

Rhone-Poulenc-Textile: *See—*
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Rhone-Progil: *See—*
Strini, Jean-Claude; and Costes, Jean-Raymond, 3,968,179.

Rice, George A.: *See—*
Girard, Roland T.; and Rice, George A., 3,968,412.

Richards, James J.; and Russell, Francis A., to Eastman Kodak Company. Apparatus for monitoring the operation of heater controllers. 3,968,489, Cl. 340-417.000.

Richardson, John K., to Priestman Brothers Limited. Roller bearings. 3,967,867, Cl. 308-207.00R.

Ricke, Maurine E.; and Ryan, Vern S. Hospital bed footboard assembly. 3,967,334, Cl. 5-319.000.

Ricoh Co., Ltd.: *See—*
Kaneko, Hirokazu; and Nakano, Hiroo, 3,968,503.

Riegel, Herbert, to Lummus Company, The. Oxidation of molten salts and recovery of chlorine values. 3,968,050, Cl. 252-187.00R.

Riethmuller, Lothar: *See—*
Henninger, Heinz Willi; Riethmuller, Lothar; Kiefer, Hans Walter; and Spreitzhofer, Ernst Gunther Robert, 3,967,900.

Riken Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Nagano, Toshihiro; Ikegaya, Masashi; Maruyama, Tadao; Shigeta, Fumio; and Sano, Yoshio, 3,968,020.

Ripert, Jacques: *See—*
Baylac, Bernard; Poujois, Robert; and Ripert, Jacques, 3,968,447.

Rippstein, Robert P., to Xerox Corporation. Imaging system for electrostatic reproduction machines. 3,967,891, Cl. 355-3.00R.

Risdon Manufacturing Company, The: *See—*
Machon, Charles S., 3,967,762.

Ritzow, Gerald R.; and Ritzow, Roger C. Shipping wrapper for aquarium. 3,967,732, Cl. 206-521.000.

Ritzow, Roger C.: *See—*
Ritzow, Gerald R.; and Ritzow, Roger C., 3,967,732.

Rixson-Firemark, Inc.: *See—*
Crane, Burke J., 3,968,379.

Robbins Company, The: *See—*
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Robert Bosch G.m.b.H.: *See—*
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Schlagmuller, Walter; and Wagner, Herbert, 3,967,597.
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Robert Krause KG Zweiniederlassung Weilheim/Teck: *See—*
Kneile, Karl, 3,967,804.

Roberts, Emyr Wyn: *See—*
Last, James David; and Roberts, Emyr Wyn, 3,968,493.

Roberts, Thomas G.; and Barr, Thomas A., Jr., to United States of America, Army. Optical radiation protection mechanism. 3,967,582, Cl. 118-5.000.

Roberts, Thomas G.; Shatas, Romas A.; and Stettler, John D., to United States of America, Army. Electron beam driven neutron generator. 3,968,378, Cl. 250-502.000.

Robins, Roland K.; and Witkowski, Joseph T., to ICN Pharmaceuticals, Inc. 1,2,3-Triazole nucleosides. 3,968,103, Cl. 260-211.50R.

Robins, Roland K.: *See—*
Christensen, Leon F.; and Robins, Roland K., 3,968,101.

Robinson, Brian, to Catnic Components Ltd. Guttering systems. 3,967,419, Cl. 52-16.000.

Robinson, Joseph J. Golf club cover-holder construction. 3,967,667, Cl. 150-1.50R.

Robitschek, Paul; and Christensen, Ross L., to Chembond Corporation. Lignocellulosic particle board cured with alkali- and acid-catalyzed phenol aldehyde thermosetting resins. 3,968,294, Cl. 428-213.000.

Rockwell International Corporation: *See—*
Cugini, John A., 3,967,657.
Hunter, Gordon E.; Rau, James E.; and Van Wyk, Rogell, 3,967,862.
Lyman, Merton C., Jr., 3,967,653.

Rodriguez, Ennio Chinio, to Lawrence Peska Associates, Inc., a part interest. Hygienic toilet-seat. 3,967,325, Cl. 4-245.000.

Rodriguez, Rodolfo R., to Baxter Laboratories, Inc. Nephelometer having means semiautomatically cancelling components from scattering by particles smaller or larger than those of interest. 3,967,901, Cl. 356-103.000.

Roeser, Stephen, to Johnson & Johnson. Package for thermometer and sheaths. 3,967,726, Cl. 206-306.000.

Rogen, Neil E. Button structure. 3,967,348, Cl. 24-90.00E.

Rogers-Dierks, Inc.: *See—*
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Rogers, Edward F.: *See—*
Hoff, Dale R.; Kulsa, Peter; Mrozik, Helmut H.; and Rogers, Edward F., 3,968,228.

Rogers, William A., to Rogers-Dierks, Inc. Seal ring. 3,967,829, Cl. 277-149.000.

Rogers, Winston L. Apparatus and method for evaluating color negatives. 3,967,897, Cl. 355-32.000.

Rohm and Haas Company: *See—*
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Leister, Norman A.; and Piccolini, Richard J., 3,968,148.
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Rol-Dri, Inc.: *See—*
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Rolls-Royce (1971) Limited: *See—*
McMurtry, Davis Roberts, 3,967,443.

Romanowski, Jan W., to Atara Corporation. Double funnel device for oxygenating sewage. 3,968,086, Cl. 261-77.000.

Rooney, Clarence S.: *See—*
Atkinson, Joseph G.; Rokach, Joshua; and Rooney, Clarence S., 3,968,236.

Rosa, Giovanni; and Brando, Pasquale, to Saipem S.p.A. Ramp for slidably supporting a pipeline to be laid on a submerged bed. 3,967,461, Cl. 61-72.300.

Rosenbaum, Paul: *See—*
Scalfon, Andrew I.; and Rosenbaum, Paul, 3,967,635.

Rosenberg, Melvin; and Brickner, Sheldon, to Rosenberg, Melvin; and Schwartz, Morris. Clasp. 3,967,351, Cl. 24-230.0SC.

Rosenstatter, Otto: *See—*
Malata, Peter; Buchsteiner, Josef; and Rosenstatter, Otto, 3,967,380.

Ross, Gray Ernest Donald, to Zenith Carburetor Company Limited, The. Cold starting devices. 3,967,610, Cl. 123-179.00G.

Ross, Sidney A. Multichannel system for and a multifactorial method of controlling the nervous system of a living organism. 3,967,616, Cl. 128-1.00C.

Rossi, Alberto: *See—*
Beck, Dieter; Schenker, Karl; and Rossi, Alberto, 3,968,142.

Rovac Corporation, The: *See—*
Edwards, Thomas C., 3,967,466.

Rowley, Gene V.: *See—*
La Charite, George J., 3,967,834.

Rozansky, Murry I. Uniflow steam engine. 3,967,535, Cl. 91-197.000.

Rozenfeld, Iosif Lvovich; Persiantseva, Viveya Pavlovna; Kuznetsov, Jury Igorevich; and Petrov, Nikolai Mikhailovich. Method for inhibiting the corrosion of metals with vapor phase inhibitors disposed in a zeolite carrier. 3,967,926, Cl. 21-2.50B.

Rubber Research Institute of Malaysia, The Board of the: *See—*
Sung, Chin Peng, 3,968,063.

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Russell, Francis A.: *See—*
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Russell, James E. Fuel overflow control device for boats. 3,967,660, Cl. 141-95.000.

Russell, Marty M. Brush assembly. 3,967,338, Cl. 15-185.000.

Ryan, Frederick M.; and Vodoklys, Frank M., to United States of America, Interior. Combination of band-type and line-type emission phosphors with explosive. 3,967,990, Cl. 149-109.400.

Ryan, John Patrick; Cowan, James Walter; Sharp, Paul Kent; Fess, Marilyn Elaine; and Babcock, James L., to Indiana University Foundation. Electrically driven hand orthosis device for providing finger prehension. 3,967,321, Cl. 3-1.100.

Ryan, Vern S.: *See—*
Ricke, Maurice E.; and Ryan, Vern S., 3,967,334.

Rybak, Joseph F.; Chamberlain, Eugene C.; Rybak, Paul E.; and Rybak, Stanley W. Barbecue type cooking grill. 3,967,613, Cl. 126-41.00R.

Rybak, Paul E.: *See—*
Rybak, Joseph F.; Chamberlain, Eugene C.; Rybak, Paul E.; and Rybak, Stanley W., 3,967,613.

Rybak, Stanley W.: *See—*
Rybak, Joseph F.; Chamberlain, Eugene C.; Rybak, Paul E.; and Rybak, Stanley W., 3,967,613.

Ryde, Emma Marta; and Ekstedt, Jan Erik, to Pharmacia Aktiebolag. Dosage unit containing a substance showing a topical effect on the eye, and a method of preparing same. 3,968,201, Cl. 424-14.000.

Ryobi, Ltd.: *See—*
Morishita, Yasomatsu, 3,967,791.

Sabatino, Anthony, to Gould Inc. Method for forming a dry charge-type battery itself. 3,967,980, Cl. 136-176.000.

Sadan, Abraham, to N L Industries, Inc. Separation of complex potassium salts from brine evaporites. 3,967,930, Cl. 23-296.000.

Saeki, Keiso: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Yamaguchi, Masahiko; Watanabe, Akio; and Saeki, Keiso, 3,967,835.

Sager, James R., to Owens-Illinois, Inc. Inspection apparatus and method for hot glass containers. 3,968,368, Cl. 250-340.000.

Sahara, Hiroshi; and Kumagai, Tooru, to Sony Corporation. Raster distortion correcting circuit. 3,968,402, Cl. 315-370.000.

Sahara, Hiroshi; and Tanaka, Yutaka, to Sony Corporation. Signal level control circuit. 3,968,452, Cl. 330-29.000.

Sahlin International, Inc.: *See—*
Cagle, Harlan R., 3,967,849.

St. Laurent, Arthur, to Carrier Corporation. Compressor control. 3,967,644, Cl. 137-512.100.

Saipem S.p.A.: *See—*
Rosa, Giovanni; and Brando, Pasquale, 3,967,461.

Sair, Louis; and Quass, Donald W., to Griffith Laboratories, Inc., The. Process for producing hydratable, translucent to glassy, proteinaceous products, and the resulting products. 3,968,268, Cl. 426-580.000.

Sakaguchi, Junci: *See—*
Takahashi, Nobuyasu; Yamaguchi, Taiichi; Sakaguchi, Junci; and Hamada, Hideo, 3,968,240.

Sakai, Satoshi; Shimizu, Norio; and Nomura, Junji, to Matsushita Electric Works, Ltd. Outer blade for electric shaver. 3,967,373, Cl. 30-43.920.

Sakakibara, Yasuhito: *See—*
Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio; Takao, Hiroshi; and Ayano, Masami, 3,968,153.

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Saleck, Wilhelm: *See—*
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Salem Tool Company, The: *See—*
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Salkin, Burton: *See—*
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Sam Stein Associates, Inc.: *See—*
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Samsonite Corporation: *See—*
Gregg, James S.; Scott, Charles J.; Suiter, Donna A.; Sullivan, James P.; Woodburn, Joseph A.; and Workman, David E., 3,967,708.

Sandoz, Inc.: *See—*
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Sandoz Ltd.: *See—*
Hochreuter, Richard, 3,968,315.
Schelling, Hans-Peter; and Schaub, Fritz, 3,968,235.

Sano, Takezo; and Kobayashi, Akira, to Sumitomo Chemical Company, Limited. Rapid analysis of cation contained in liquid. 3,967,932, Cl. 23-230.00R.

Sano, Yoshio: *See—*
Nagano, Toshihiro; Ikegaya, Masashi; Maruyama, Tadao; Shigeta, Fumio; and Sano, Yoshio, 3,968,020.

Santa Fe International Corporation: *See—*
Lea, Freeman Roderick, 3,967,572.

Santala, Teuvo J.: *See—*
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,968,380.

Sasaki, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary piston engine equipped with an improved air or fuel injection opening. 3,967,592, Cl. 123-8.090.

Sasaki, Yositaka: *See—*
Shimada, Kazushi; Macda, Toru; Nishizawa, Tamotu; Sasaki, Yositaka; Narisada, Takehiko; and Anzai, Hisao, 3,968,059.

Satarov, Alexandr Georgievich: *See—*
Kamov, Nikolai Ilich; Priorov, Nikolai Nikolaevich; Kovalev, Anatoly Fedorovich; Kupfer, Mark Alexandrovich; Satarov, Alexandr Georgievich; Sherman, Iosif Shulimovich; Vakulenko, Anatoly Filippovich; Kovyryalkin, Igor Ivanovich; Stetsenko, Stanislav Ivanovich; Golstman, Vladimir Borisovich; and Gurkov, Konstantin Nikolaevich, 3,967,996.

Sato, Akira: *See—*
Hinata, Masanao; Takei, Haruo; Sato, Akira; and Iwamoto, Atsuo, 3,967,967.

Satoh, Hirokazu; and Fujimura, Akira, to Onoda Chemical Industry Company, Limited. Process for treating sodium silico fluoride. 3,968,197, Cl. 423-339.000.

Satoh, Masao: *See—*
Hirano, Itsuro; Uchiyama, Mitsuru; and Satoh, Masao, 3,967,940.

Sauer, David Allen, to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene coatings for glass fabrics. 3,968,297, Cl. 428-268.000.

Savit, Carl H., to Western Geophysical Company of America. Method for suppressing side lobes in correlation processes. 3,968,471, Cl. 340-15.5CC.

Sayles, David C., to United States of America, Army. Technique for preventing afterburning of the inert components of solid-propelled rocket motors by using formamidinesulfinic acid in the binder of the inert components. 3,967,444, Cl. 60-255.000.

Scales, Ralph E., to Bethlehem Steel Corporation. Marine apparatus having telescopic legs. 3,967,458, Cl. 61-46.500.

Scarff, David, to Lawrence Peska Associates, Inc., a part interest. Linear magnetic generator. 3,968,387, Cl. 310-16.000.

Schacht, Erich; Lauterbach, Gunter; Mehrhof, Werner; Nowak, Herbert; and Simanc, Zdenek, to Merck Patent Gesellschaft mit beschrankter Haftung. Phenoxypropionic acid derivatives. 3,968,143, Cl. 260-473.00G.

Schaffner, Gus J., III, to Schaffner Manufacturing Company, Inc. Work polishing tool and method of making same. 3,967,418, Cl. 51-334.000.

Schaffner Manufacturing Company, Inc.: *See—*
Schaffner, Gus J., III, 3,967,418.

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Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd. Composition and method for combating insects with alkylenedioxyphenyl derivatives. 3,968,235, Cl. 424-282.000.

Schenk, Paul: *See—*
Zuhlsdorff, Klaus Peter; and Schenk, Paul, 3,967,630.

Schenkel, Alan G., to Ciba-Geigy Corporation. Synergistic germicidal compositions containing 3,5-dimethyl-4-chlorophenol. 3,968,210, Cl. 424-235.000.

Schenker, Karl: *See—*
Beck, Dieter; Schenker, Karl; and Rossi, Alberto, 3,968,142.

Scherer, William C.; and Jines, Michael Dwain, to Graco Inc. Flow ratio control system. 3,967,634, Cl. 137-99.000.

Schering Aktiengesellschaft: *See—*
Rahtz, Dieter; Koch, Henning; and Gerhards, Erich, 3,968,219.

Schering Corporation: *See*—
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Schiff, Sidney, to Phillips Petroleum Company. Ashless dispersant products and process. 3,968,151, Cl. 260-501.200.
Schlage, Ernest L., to Schlage Lock Company. Detector cylinder. 3,967,481, Cl. 70-431.000.
Schlage, Ernest L., to Schlage Lock Company. Lock. 3,967,846, Cl. 292-359.000.
Schlage Lock Company: *See*—
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Schlage, Ernest L., 3,967,846.
Schlagmuller, Walter; and Wagner, Herbert, to Robert Bosch G.m.b.H. Electromagnetically actuated fuel injection valve. 3,967,597, Cl. 123-32.0JV.
Schlumberger Technology Corporation: *See*—
Young, David E., 3,967,647.
Schmidt, Andreas, to A. Ehrenreich & Cie. Ball socket for ball joint. 3,967,907, Cl. 403-133.000.
Schmidt, Donald D.; Jewett, Gary L.; Melcher, Richard G.; and Wessling, Ritchie A., to Dow Chemical Company, The. Method for quantitatively analyzing substances containing elements other than carbon, hydrogen and oxygen and volatile organic compounds. 3,967,928, Cl. 23-232.00R.
Schmidt, Erwin: *See*—
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Scholes, Addison B.; and Semans, Bruce F., to Ball Corporation. Electrostatic scrubber-precipitator. 3,967,939, Cl. 55-108.000.
Scholtus, Christiaan Gustaaf Adolf: *See*—
Piepers, Gijsbrecht Gerhardus; Scholtus, Christiaan Gustaaf Adolf; and Vons, Leonard Hendrik, 3,968,008.
Schora, Frank C., Jr.: *See*—
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Schramm, Walter: *See*—
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Schrider, Michael Stanley; Poeschel, Gordon Paul; and Annand, Anthony Morris, to American Cyanamid Company. Method of controlling fleas and ticks on cats and dogs. 3,968,207, Cl. 424-205.000.
Schrider, Michael Stanley: *See*—
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Schroder, Rolf: *See*—
Winkler, Alfred; and Schroder, Rolf, 3,968,509.
Schroeder, Charles H. X-ray cassette holder having lever means for positionally adjusting a cassette supporting member. 3,968,374, Cl. 250-468.000.
Schulte-Elte, Karl-Heinrich, to Firmenich S.A. Process for the preparation of damascenone derivatives. 3,968,161, Cl. 260-586.00R.
Schulz, Gerhard: *See*—
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Schulz, Hans Peter: *See*—
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Schumacher, Walter Carl, to General Electric Company. Wire terminal electrical contact. 3,967,873, Cl. 339-95.00D.
Schuman, Mark. Pressure modulated alarm system. 3,968,482, Cl. 340-240.000.
Schurger, Rainer: *See*—
Walter, Lothar; Burkl, Erich; Schurger, Rainer; and Olschewski, Armin, 3,967,865.
Schutte, Daniel A.: *See*—
Hall, Richard W.; Schutte, Daniel A.; and Sonnenberg, Sven, 3,967,542.
Schutte, Richard W., to Scott Paper Company. Flocked filamentary element and structures made therefrom. 3,968,283, Cl. 428-90.000.
Schwartz, Morris: *See*—
Rosenberg, Melvin; and Brickner, Sheldon, 3,967,351.
Schwartz, Robert D.: *See*—
Liles, Arthur W.; and Schwartz, Robert D., 3,968,036.
Schwarz, Lothar. Needle holder for medical syringes, vials, or the like. 3,967,621, Cl. 128-216.000.
Schwarze, Werner; and Wolff, Siegfried, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Reaction product of 4,4-bis-(hydroxymethyl)-cyclohexene compounds with sulfur. 3,968,074, Cl. 260-42.240.
Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Linear-induction motor especially for high-speed suspension vehicles. 3,967,561, Cl. 104-148.0LM.
SCM Corporation: *See*—
Eppler, Richard A., 3,967,971.
Scott, Charles J.: *See*—
Gregg, James S.; Scott, Charles J.; Suiter, Donna A.; Sullivan, James P.; Woodburn, Joseph A.; and Workman, David E., 3,967,708.
Scott Paper Company: *See*—
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Scoville, Ray R.; and Tipton, Harold F., to Vector Electronic Company. Insulation slitting and wire wrapping tool. 3,967,661, Cl. 140-124.000.
Sealed Power Corporation: *See*—
Davis, Lewis M., 3,967,359.
Sealfon, Andrew I.; and Rosenbaum, Paul. Valve for carbonator. 3,967,635, Cl. 137-102.000.
Sears, James K.: *See*—
Herber, John F.; Sears, James K.; and Thompson, Quentin E., 3,968,320.
Sears, James Kern, to Monsanto Company. Pressure-sensitive record material and dye solvents therefor. 3,968,301, Cl. 428-323.000.
Seckinger, Ernst; Vogelsanger, Emil; and Wirthlin, Robert, to Reishauer AG. Device for mounting and dismounting a grinding wheel assembly onto or from, respectively, the grinding spindle of a grinding machine. 3,967,415, Cl. 51-168.000.
Seeley, Clarence E., to Anchor Hocking Corporation. Method of improving glass batch melting by use of water glass. 3,967,943, Cl. 65-27.000.
Seglin, Leonard; and Eddinger, Ralph Tracy, to Cogas Development Company. Synthesis gas manufacture. 3,968,052, Cl. 252-373.000.
Seiden, Paul; and Martin, James Bruce, to Procter & Gamble Company, The. Process for preparing polyblycerol. 3,968,169, Cl. 260-615.00R.
Seiler, Wolfgang, to Staubli Ltd. Spring hook for the harness pull of a double-lift open-shed jacquard machine. 3,967,652, Cl. 139-59.000.
Seiter, Charles, to Kaye, Stanton H., a part interest. Telltale device. 3,967,579, Cl. 116-114.500.
Seitz, Lamont J.; and Bowen, John G., to Baxter Laboratories, Inc. Prothrombin timer. 3,967,934, Cl. 23-253.00R.
Sejbal, Dalibor; Holub, Josef; Miks, Zbynek; and Vasek, Vitezslav, to Vyzkumny Ustav Bavlnarsky. Apparatus for stabilizing the fabric within the weft beat-up area in wave weaving looms. 3,967,655, Cl. 139-291.00R.
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Seragnoli, Enzo, to G. D Societa Per Azioni. Apparatus for shaping, while transferring, understrips of hinge lid cigarette packets. 3,967,543, Cl. 93-36.010.
Seragnoli, Enzo, to G. D Societa Per Azioni. Device for severing and feeding flaccid wrapping sheets. 3,967,767, Cl. 225-96.000.
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Settles, Charles P.; and Evans, Edward R., to United States of America, Army. Percussion ignition system for a smokeless, flashless, low noise cartridge. 3,967,552, Cl. 102-38.000.
Severson, Harvey M. Foldable bed. 3,967,327, Cl. 5-9.00B.
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Shatila, Mounir A.; and Beck, Roderick G., to American Potato Company. Freeze-thaw stable, french fry potato product and process for producing the same. 3,968,265, Cl. 426-550.000.
Shavyrin, Vladimir Sergeevich; Gusakov, Vyacheslav Nikolaevich; Pankova, Klavdia Vasilievna; Polyakova, Nina Petrovna; Shirkaeva, Natalya Petrovna; Gorin, Valentin Nikolaevich; Goyovin, Oleg Semenovich; Mastjukova, Alexei Egorovich, deceased; and by Mastjukova, Maria Pavlovna, heir at law. Method of preparation of material for lubrication of external surface of drilling pipe. 3,968,043, Cl. 252-56.00R.
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Shimada, Kazushi; Maeda, Toru; Iwaoka, Yasuhiko; and Anzai, Hisao, to Mitsubishi Rayon Co., Ltd. Method for removing heat of polymerization. 3,968,090, Cl. 526-88.000.

Shimano, Ikuya; and Matsui, Takashi, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Method for producing receptacles from thermoplastic resin foam sheet. 3,967,991, Cl. 156-85.000.

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Smeets, Fred, to Citrex, Societe Anonyme. Detergent compositions. 3,968,047, Cl. 252-95.000.

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Tammen, Johnny Lee. Flange assembly for installing a toilet fixture. 3,967,326, Cl. 4-252.00R.

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Wells, Royzell F. Precision positioning device for tool blades and the like. 3,967,377, Cl. 30-320.000.

Wells, Thomas R., to Bell & Howell Company. Carriage mechanism for microfiche reader. 3,967,890, Cl. 353-27.00A.

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Whisler, Edwin Lee, to Deere & Company. Vandal latch for preventing removal of a pop-out type vehicle window. 3,967,859, Cl. 296-28.00C.

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LIST OF DEFENSIVE PUBLICATIONS

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DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF JULY, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687.

Attwood, Terence E., J. L. Freeman, and R. J. Hoy, to Imperial Chemical Industries Ltd. Polymer compositions. T948,008, 7–6–76, Cl. 260—45.

Bouknecht, Max A., M. I. Davis, and M. J. Mitchell, Jr., to International Business Machines Corp. Multiprocessor interfacing apparatus. T948,012, 7–6–76, Cl. 340—172.

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Adkison, Archie D., Jr. Door lock. Re. 28,893, Cl. 292-292.000.

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Kanij, Johannes B. W.; Noothout, Arend J.; and Hermans, Marie E. A., to Reactor Centrum Nederland. Method for the preparation of concentrated anion-deficient salt solutions. Re. 28,894, Cl. 252-301.100.

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Armstrong, John C. Aerosol dispenser. 240,401, 7–6–76, Cl. D9—23.

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CLASS 124

24R 3,967,609

CLASS 126

41R 3,967,613
229 3,967,614
369.2 3,967,615

CLASS 127

23 3,967,975

CLASS 128

1C 3,967,616
36 3,967,617
130 3,967,618
145.8 3,967,619
214C 3,967,620
216 3,967,621
287 3,967,622
3,967,623
3,967,624
326 3,967,625
352 3,967,626
400 3,967,627
417 3,967,628

CLASS 131

144 3,967,629

CLASS 132

40 3,967,630
73 3,967,631

CLASS 134

83 3,967,632

CLASS 136

75 3,967,976
133 3,967,977
146 3,967,978
173 3,967,979
176 3,967,980

CLASS 137

43 3,967,633
99 3,967,634
102 3,967,635
106 3,967,636
110 3,967,637
216 3,967,638
234.5 3,967,639
269 3,967,640
344 3,967,641
499 3,967,642
512.1 3,967,644
525.1 3,967,645
562 3,967,643
596.12 3,967,646
614.11 3,967,647
625.65 3,967,648
636.3 3,967,649

CLASS 138

144 3,967,650
145 3,967,651

CLASS 139

59 3,967,652
88 3,967,653
291R 3,967,655
370.2 3,967,656
450 3,967,657
452 3,967,654

CLASS 140

92.1 3,967,658
124 3,967,651

CLASS 141

79 3,967,659
95 3,967,660
148 3,967,662

CLASS 144

2Z 3,967,663
32R 3,967,664
144.5R 3,967,665

CLASS 148

1.5 3,967,981
3,967,982
2 3,967,983
6.16 3,967,984
6.35 3,967,985
105 3,967,986
171 3,967,987
187 3,967,988

CLASS 149

19.2 3,967,989

109.4 3,967,990
CLASS 150
1 3,967,666
1.5R 3,967,667
52R 3,967,668
CLASS 151
41.73 3,967,669
CLASS 152
337 3,967,670
CLASS 156
64 3,967,994
85 3,967,991
3,967,992
86 3,967,993
3,967,995
156 3,967,996
201 3,967,997
226 3,967,998
258 3,968,000
273 3,967,999
523 3,968,001
CLASS 159
13A 3,968,002
48R 3,968,003
CLASS 160
232 3,967,671
CLASS 162
152 3,968,004
158 3,968,005
198 3,968,006
CLASS 164
82 3,967,673
181 3,967,672
297 3,967,674
CLASS 165
1 3,967,675
2 3,967,676
162 3,967,677
CLASS 166
53 3,967,678
224A 3,967,679
250 3,967,680
277 3,967,681
278 3,967,682
CLASS 168
4 3,967,683
CLASS 172
311 3,967,684
573 3,967,685
CLASS 173
22 3,967,686
32 3,967,687
137 3,967,688
CLASS 174
36 3,968,321
72A 3,968,322
135 3,968,323
CLASS 175
391 3,967,689
CLASS 176
41 3,968,007
78 3,968,008
CLASS 177
25 3,967,690
230 3,967,691
CLASS 178
2R 3,968,324
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6.8 3,968,327
66R 3,968,326
79 3,968,330
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6R 3,968,329
16A 3,968,333
141 3,968,332
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175.2C 3,968,335
CLASS 180
5R 3,967,692
CLASS 181
33G 3,967,693
CLASS 182
82 3,967,694
86 3,967,695
142 3,967,696
CLASS 184
1.5 3,967,697
15A 3,967,698
CLASS 187
2 3,967,699
29R 3,967,700
3,967,701
3,967,702
78 3,967,703
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32 3,967,704
71.9 3,967,705
170 3,967,706
284 3,967,707
CLASS 190
41B 3,967,708
CLASS 192
4A 3,967,709
98 3,967,710
108 3,967,711
CLASS 193
1 3,967,712
CLASS 194
92 3,967,713
CLASS 195
98 3,968,009
103.5R 3,968,010
3,968,011
142 3,968,012
CLASS 197
1R 3,967,714
16 3,967,715
CLASS 198
24 3,967,716
31AA 3,967,717
127R 3,967,718
175 3,967,719
193 3,967,720
195 3,967,721
213 3,967,722
235 3,967,723
268 3,967,724
CLASS 200
5A 3,968,336
61.62 3,968,337
68 3,968,338
86A 3,968,339
CLASS 202
170 3,968,013
263 3,968,014
CLASS 204
159.15 3,968,015
159.16 3,968,016
180P 3,968,017
192 3,968,018
3,968,019
203 3,968,020
256 3,968,021
279 3,968,022
CLASS 206
108 3,967,725
306 3,967,726
344 3,967,727
364 3,967,728
440 3,967,729
461 3,967,730
508 3,967,731
521 3,967,732
CLASS 208
86 3,968,023
111 3,968,024
135 3,968,025
210 3,968,026
3,968,027
3,968,028
3,968,031
216 3,968,029
347 3,968,030
CLASS 209
166 3,968,032
403 3,968,033
CLASS 210
8 3,968,034
15 3,968,035
3,968,036
47 3,968,037
225 3,968,039
3,968,040
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275 3,968,038
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113 3,967,733
199 3,967,734
CLASS 212
3 3,967,735
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CLASS 214
1BB 3,967,737
1S 3,967,738
6C 3,967,739
16.4C 3,967,740
27 3,967,741
390 3,967,743
766 3,967,742
770 3,967,744
CLASS 215
216 3,967,745
260 3,967,746
CLASS 217
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131F 3,968,340
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530 3,968,347
535 3,968,348
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90.4 3,967,748
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266 3,967,750
268 3,967,751
269 3,967,752
3,967,753
273 3,967,754
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3 3,967,755
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CLASS 222
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153 3,967,760
194 3,967,761
321 3,967,762
402.15 3,967,763
536 3,967,764
554 3,967,765
CLASS 223
85 3,967,766
CLASS 225
96 3,967,767
CLASS 226
115 3,967,768
194 3,967,769
CLASS 227
2 3,967,770
10 3,967,771
CLASS 229
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18 3,967,772
51DB 3,967,773
51TC 3,967,774
54R 3,967,775
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3 3,967,777
7 3,967,778
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61.6R 3,968,349
92PC 3,968,351
150.1 3,968,352
150.2 3,968,353
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3,967,780
68R 3,967,781
92B 3,967,782
CLASS 239
102 3,967,783
583 3,967,784
CLASS 240
2R 3,968,355
2S 3,968,356
6.4W 3,968,357
41.55 3,968,358
51.11R 3,968,359
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28 3,967,785
CLASS 242
4R 3,967,786
25R 3,967,787
55.19A 3,967,788
56R 3,967,789
67.2 3,967,790
84.1R 3,967,792
84.21R 3,967,791
96 3,967,793
107.4R 3,967,794
125.1 3,967,795
189 3,967,796
222 3,967,800
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151B 3,967,797
153R 3,967,798
181 3,967,799
CLASS 246
34R 3,967,801
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117.4 3,967,802
152 3,967,803
188.2 3,967,804
262 3,967,805
287 3,967,806
447 3,967,807
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214R 3,968,361
216 3,968,362
228 3,968,363
237R 3,968,364
239 3,968,366
338 3,968,365
339 3,968,367
340 3,968,368
344 3,968,369
3,968,370
380 3,968,371
402 3,968,372
419 3,968,373
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499 3,968,377
502 3,968,378
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146 3,967,810
175 3,967,811
214 3,967,812
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56R 3,968,043
62.1L 3,968,044
68 3,968,045
95 3,968,046
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157 3,968,048
171 3,968,049
187R 3,968,050
300 3,968,051
301.1 Re.28,894
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439 3,968,053
468 3,968,054
506 3,968,055
514 3,968,056
516 3,968,057
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CLASS 259
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CLASS 260
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2.5AN 3,968,061
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17.4SG 3,968,063
23XA 3,968,064
23.5R 3,968,065
29.2TN 3,968,066
29.6RB 3,968,068
29.6F 3,968,069
29.6R 3,968,067
37N 3,968,071
40R 3,968,072
42.1R 3,968,073
42.24 3,968,074
42.2S 3,968,075
42.35 3,968,076
45.75N 3,968,081
45.8A 3,968,077
45.8N 3,968,078
45.8R 3,968,079
45.85H 3,968,082
45.9QB 3,968,080
47CP 3,968,083
47EN 3,968,084
75N 3,968,085
78P 3,968,087
86.1E 3,968,059
123.5 3,968,097
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470 3,968,314
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515P 3,968,152
526N 3,968,153
534S 3,968,154
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543P 3,968,156
551P 3,968,157
553R 3,968,158
566F 3,968,159
584C 3,968,160
586R 3,968,161
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599 3,968,163
604R 3,968,164
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609F 3,968,167
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9 3,967,816
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CLASS 270
1R 3,967,818
CLASS 272
70 3,967,820
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11C 3,967,821
26R 3,967,822
95R 3,967,823
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110 3,967,824
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167F 3,967,826
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10D 3,967,828
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149 3,967,829
CLASS 279
16 3,967,830
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11.12 3,967,832
291 3,967,834
639 3,967,833
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27.5 3,967,835
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12 3,967,836
112 3,967,837
190 3,967,838
199 3,967,839
222 3,967,840
276 3,967,841
3,967,842
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273 3,967,843
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336.3 3,967,844
340 3,967,845
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31.2 3,967,848
64A 3,967,849
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CLASS 296
28C 3,967,859
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416 3,967,851
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CLASS 301
37R 3,967,855
105B 3,967,856
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CLASS 302
2R 3,967,858
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6C 3,967,861
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202R 3,968,382
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187.1 3,967,866
207R 3,967,867
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330SM 3,967,870
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50 3,968,464
CLASS 335
230 3,968,470
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110 3,968,465
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107 3,968,468
139 3,968,469
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42 3,968,466
119 3,968,467
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112R 3,967,874
263R 3,967,875
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146.3E 3,968,475
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173FF 3,968,479
3,968,480
174TF 3,968,481
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781CA 3,968,497
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139C 3,968,500
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99 3,967,879
133 3,967,880
150 3,967,881
160LC Re.28,891
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88 3,967,900
103 3,967,901
114 3,967,902
167 3,967,903
201 3,967,904
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38 3,968,512
CLASS 358
4 3,968,513
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5 3,968,515
27 3,968,516
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2 3,967,906
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402 3,967,910
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48 3,967,911
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90 3,967,914
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141 3,967,918
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121 3,968,204
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200 3,968,206
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248 3,968,211
250 3,968,212
251 3,968,213
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273 3,968,219
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274 3,968,230
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277 3,968,232
279 3,968,233
282 3,968,234
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283 3,968,236
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319 3,968,241
321 3,968,242
322 3,968,249
326 3,968,243
330 3,968,244
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331 3,968,247
333 3,968,248
3,968,250
337 3,968,252
340 3,968,251
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18 3,968,254
33 3,968,255
38 3,968,256
41 3,968,257
62 3,968,258
63 3,968,259
96 3,968,260
98 3,968,261
134 3,968,262
250 3,968,263
535 3,968,264
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566 3,968,266
570 3,968,267
580 3,968,268
629 3,968,269
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15 3,968,271
84 3,968,272
122 3,968,273
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297 3,968,276
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95 3,968,285
99 3,968,286
136 3,968,287
156 3,968,282
161 3,968,288
195 3,968,289
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203 3,968,291
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DEFENSIVE PUBLICATIONS APPLICATIONS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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DEFENSIVE PUBLICATIONS APPLICATIONS

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Elliot L. Richardson, Secretary

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, Commissioner